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TICK PARALYSIS OR POLIOMYELITIS

P. B. Peacock, M.B., Ch.B., D.P.H., D.I.H., D.T.M. & H., L.M.C.C.

Medical Officer of Health, Germiston, and Department of Preventive Medicine, University of the Witwatersrand

In his excellent summary of our knowledge concerning tick paralysis, Ransmeier (1949) notes that many cases of this condition (including his 4 cases) were referred as poliomyelitis. The seasonal incidence is the same, and many of the clinical manifestations overlap. Differential features in tick paralysis are stated to be the usual absence of marked fever, normal or near-normal cerebrospinal fluid findings, the relative absence of muscle spasm, little stiffness of the back or neck, marked ataxia preceding the paralysis, and the development of a diffuse, bilateral, ascending type of paralysis which, except in severe fatal cases, disappears rapidly on the complete removal of the tick. Sensory involvement is usually absent in both tick paralysis and poliomyelitis.

It is apparent that the differential features listed are not absolute but are a matter of degree, and the following case report is interesting in this regard:

CASE REPORT

The patient, a European male aged 16 months, had always been a healthy boy. On 13 June 1957 his parents noted that he was rubbing his right ear and his knees seemed to be hurting him. On the morning of 15 June he was fretful and refused to walk (he had been walking for some months). The next day he appeared mildly feverish and started 'shaking', and when seen by his family doctor on 17 June there was just detectable weakness of the right leg. When seen in consultation as a possible case of poliomyelitis on 18 June, he showed slight neck stiffness and some non-specific weakness of both legs, which were tender on movement. The knee and ankle jerks were absent, he was afebrile, and the rest of the physical examination was negative. The right ear canal could not be visualized because of wax (the history of ear rubbing was not obtained at this time). His condition steadily deteriorated over the next 2 days, with increasing tenderness and weakness of both legs, and when seen again on 20 June he was obviously a very sick boy with neck retraction and respiratory difficulty. No leg movements could be elicited, he was unable to sit or lift his head, and the leg-straightening test was strongly positive.

There was no sensory loss. Other non-neurological physical signs were still absent but this time a tick was visualized in the right ear canal. Over a period of some hours the tick was floated out (alive) with liquid paraffin and within 12 hours the child was laughing, showed no further respiratory distress, and could lift his head. By 26 June he was sitting up and standing with assistance and a re-examination on 30 August 1957 showed only very slight residual weakness of the dorsiflexors of the right foot, with an apparent complete return to normal by the end of September.

No treatment was given during the illness save for ¼ tablet of aspirin twice a day for the first 5 days.

At the time of the illness the child had not been out of Germiston for 3 months and there had been no cases of poliomyelitis in the municipality during that period. The family owned two dogs from whom ticks had occasionally been obtained and which played with the child in a sand-pit in the back yard.

The tick was identified by Dr. F. Zumpt, of the South African Institute for Medical Research, as a nymphal specimen of *Otobius megnini* (Duges), commonly known as the spiny ear tick.

A blood count at the height of the illness gave a leucocyte 12,300 per c.mm., with 25·5% neutrophils, 6·5% monocytes, 66% lymphocytes and 2% eosinophils. No poliovirus was identified from the blood but Type-I poliovirus was isolated (confirmed on a repeat check) from a stool specimen by the Poliomyelitis Research Laboratory, Rietfontein.

DISCUSSION

Were it not for the identification of poliovirus from a stool specimen (this information reached us 2 months after the clinical illness), the acceptable diagnosis in this case would have been one of tick paralysis. The preliminary ataxia, apyrexia, moderate leucocytosis, little stiffness of the back and neck, and the diffuse, bilateral, ascending type of paralysis, together with the relatively dramatic initial recovery on removal of the tick, would all be in favour of this diagnosis. Although most authors on the subject state that the syndrome is produced by gravid female hard ticks (family *Ixodidae*) only, Ross and Oxer (quoted by Theiler, 1949) report that sufficiently large numbers of nymphs of the Australian paralysis-tick, Ixodes holocyclus can produce paralysis in experimental animals.

Otobius megnini (which is a soft tick of the family Argasidae) is considered (Parish, 1949) a serious pest of domestic animals in semi-arid regions of the world and nymphs have been collected from the ears of cattle, sheep, goats, dogs, deer and man. The ear tick is unusual in that it lives its whole parasitic existence on the one host where the larval and

nymphal stages are passed in the external ear canal. After a last engorgement the ticks fall to the ground for their final moult into adults and mating and ovideposition. The adults do not feed. The only soft tick previously reported (in Russia) as being related to paralysis in humans is *Ornithodorus lahorensis*, when present in large numbers.

Whether the finding of the tick was coincidental, or whether the finding of poliovirus was coincidental, or whether the two agents were synergistically related, cannot now be established, but this case does arouse doubt in one's mind about the validity of the diagnosis in certain other reported clinical cases of tick paralysis, especially where complete recovery did not occur in a few days. Most of the literature on tick paralysis antedates the time when tissue-culture techniques became readily available for the identification of poliovirus and I can find no reference to cases where a search for this virus has been conducted along modern lines. In the 4 African cases reported by Veneroni (quoted by Stanbury and Huyck, 1945), by Zumpt and Glajchen (1950), and by Erasmus (1952), the clinical syndromes described could have been due to a viral aetiology, though not necessarily so. Is it unreasonable to suggest that in a certain number of reported cases of tick paralysis the tick may have acted as a local non-specific irritant with a consequent increased likelihood of poliovirus involvement of the corresponding segment of the spinal cord as has been frequently reported with other non-specific irritants?

SUMMARY

The close similarity between the clinical picture of tick paralysis and poliomyelitis is pointed out.

A case is reported which could easily have been one of tick paralysis and where the removal of a tick (*Otobius megnini*) from the ear canal led to a dramatic clinical improvement, but from which Type-I poliovirus was recovered from the stool.

If this case was one of tick paralysis it is the first human case reported caused by a single soft tick (family *Argasidae*).

It is suggested that in certain other recorded cases of tick paralysis a viral aetiology has not been convincingly excluded and the possibility is mooted that a tick bite may act as a localizing and precipitating factor for systemic viral infections.

I wish to thank Dr. A. Jankowitz for letting me see the patient, and Drs. J. H. S. Gear and F. Zumpt for their help.

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ANNUAL REPORT FOR 1956 OF THE COMMISSIONER FOR MENTAL HYGIENE, DR. I. R. VERMOOTEN

By our Parliamentary Correspondent

The annual report of the Commissioner for Mental Hygiene for the year ended 31 December 1956 has been tabled in the House of Assembly. It records that the certified patients admitted to mental hospitals and institutions for mental defectives in South Africa during the year numbered 1,263 Europeans and 1,862 non-Europeans, an increase of 234 Europeans and a decrease of 88 non-Europeans as compared with the previous year's figures.

The Voluntary Boarders admitted numbered 368 Europeans and 26 non-Europeans, an increase of 61; the persons committed by the law courts for observation of their mental condition numbered 170 Europeans and 218 non-Europeans, an increase of 80; and the inebriates admitted were 92 European males and 21 European females.

The total admissions of all classes amounted to 4,249, an increase of 452.

On 31 December 1956 there were 8,164 European and 12,705 non-European patients on the registers of the Union's mental hospitals and institutions for mental defectives. This total of 20,239 is 210 more than the figure for the previous year.

During 1956 the certified patients who were discharged included 300 Europeans discharged recovered, and 276 relieved, and 850 non-Europeans discharged recovered and 552 relieved. These figures do not include Voluntary Boarders, temporary patients, observation cases or inebriates.

The total number of patients discharged by death and all other circumstances was 4,034.

The opinion is expressed in the report that as the result of the application of intensive and active methods of treatment, including psychotherapy, electro-convulsive and coma therapy, insulin therapy, tranquillizing drugs, occupational and recreational therapy, and other recognized methods for the control and treatment of mental disorders, the turn-over of patients was satisfactory.

The number of authorized medical posts at the various mental hospitals and institutions for mental defectives is a bare minimum, and several of the posts are filled by temporary officers. A very grave shortage of nurses exists, particularly female nurses. The number of resignations, at several of the hospitals, exceeded the number of appointments. The vast majority of qualified female nurses are married and therefore appointed in a temporary capacity. The report, however, records that despite the shortages and the overcrowded hospitals, the care and treatment of patients was in no way neglected.

WORLD MEDICAL ASSOCIATION

Council Session. The Council of WMA will hold its 32nd Session at La Confédération des Syndicates Médicaux Français Paris, France, on 3-10 May 1958, when reports will be received on the various activities of the Association and the agenda for the General Assembly will be determined. A special feature of the Session will be a joint meeting with members of the Executive Committee of the Syndicates Médicaux Français to consider problems of mutual interest. Dr. J. Jonchères, President of the Confédération will preside at the joint meeting.

XIIth General Assembly. The XIIth General Assembly of WMA will be held at the Parliament House, Copenhagen, Denmark, on 15-20 August 1958. The information concerning the programme will be available at the Secretariat of the World Medical Association, 10 Columbus Circle, New York 19, New York, in April or May.

Council Member Honoured. Dr. Leonard Ross Mallen (Adelaide, Australia), member of Council of WMA since 1951, and Vice-Chairman of Council, has been appointed an Officer of The Most Excellent Order of the British Empire. His name appeared in Her Majesty's New Year Honours list.

World Medical Periodicals. The 2nd edition of *World Medical* Periodicals (1957) published by WMA is now available. Orders should be addressed to the Editor, British Medical Journal, Tavistock Square, London, W.C.1.

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VAN DIE REDAKSIE

VERSKILLE IN INDIWIDUELE ENERGIEVERBRUIK

Dit is 'n ou bekende waarheid dat vet van kos afkomstig is—watter ander oorsprong kan dit miskien hê? En omdat die menslike liggaam onderworpe is aan die tweede wet van die termodinamika, kan oormatige kos wat geëet word nie somaar soos 'n groot speld verdwyn nie; dit word òf in energie òf in liggaamsmassa omgesit. Dit moet egter onthou word dat 'n klein daaglikse oormaat voedsel van 100 kalorieë gelyk staan aan 'n vettoename van 4 kilogram per jaar. En tog ken ons almal mense wat ‚soos 'n perd' kan eet maar nooit vetter word nie en, aan die ander kant, ken ons almal mense wat oënskynlik min eet en tog te vet is. Widdowson en McCance[1-3] het bewys dat daar in enige gelyksoortige groep volwassenes en kinders altyd 'n paar is wie se kalorie-inname veel groter is as dié van die res, en dat die verskil nie noodwendig op liggaamsgrootte of ooglopende spieraktiwiteit berus nie.

'n Moontlike rede vir hierdie toedrag van sake is dat sommige mense veel meer energie verbruik as ander wanneer hulle dieselfde taak verrig. In 1955 het Edholm *et al.*[4] bevind dat kadette wat uiterlik baie min verskil het, onderling verbasend verskil het in hul energie-uitgawe by lê, sit en staan. Booyens en McCance[5] het hierdie werk 'n stap verder gevoer. Hulle het 14 vrouens en 21 mans bymekaargemaak en hul afsonderlike energieverbruik by lê, sit en staan, onder vergelykbare toestande, gemeet. Hulle berekening van energie was gegrond op die ontleding van uitgeasemde lug wat in Douglas-sakkies opgevang was. Drie van die deelnemers aan die toets se metabolismespoed was niks minder as 30% onder die gemiddelde spoed van die groep vir alle aktiwiteite nie, en daar was een wie se spoed 24% bo die gemiddelde was. Hierdie navorsers het vervolgens vir nadere ondersoek 6 deelnemers uitgekies wie se energieverbruik die meeste van die gemiddelde afgewyk het. Die energie-balanse van hierdie 6 deelnemers is vir 'n tydperk van 7-14 dae bestudeer. Die inname is bereken deur die voedsel te weeg, en die verbruik deur 'n tyd- en bewegingstudie tesame met berekening by die belangrike aktiwiteite. Dit is bevind dat, vir alle aktiwiteite, hierdie 6 mense geweldig van mekaar verskil het in die hoeveelheid energie wat hulle verbruik het.

Booyens en McCance beweer dat hierdie skerp verskille in energieverbruik ‚heeltemal goed kan verklaar waarom party mense minder kalorieë nodig het om hul gewig te behou en waarom ander tweemaal soveel kalorieë daarvoor nodig het'. Aan die ander kant het hulle bevind dat die mens met 'n baie lae metabolismespoed nie noodwendig geneig is om vet te word nie. Twee van hulle deelnemers wie se stofwisselingspoed baie laag was, was besonder maer en hoef hul nooit te bekommer het oor die kos wat hulle geëet het nie. Die

EDITORIAL

DIFFERENCES IN INDIVIDUAL ENERGY EXPENDITURE

It is a truism that fat comes from food—where else could it come from? Furthermore, the human body being subject to the second law of thermodynamics, any excess food ingested cannot vanish into thin air, but must either be transformed into energy or body bulk. It must, however, be remembered that a tiny daily excess food intake of 100 calories is equivalent to a gain of 4 kilograms of fat per annum. Nevertheless, we all know people who 'eat like a horse' but fail to put on weight, and conversely others who seem to eat less than their neighbours and yet are obese. Widdowson and McCance[1-3] have shown that, in any homogeneous group of adults or children, there are always some individuals who have caloric intakes greatly in excess of those of others, and that the difference cannot necessarily be explained by size or obvious muscular activity.

A possible explanation of this state of affairs would be a greatly varying expenditure of energy in different individuals performing the same tasks. In 1955 Edholm *et al.*[4] found that cadets who appeared very similar outwardly sometimes expended surprisingly different amounts of energy in lying, sitting and standing. Booyens and McCance[5] have taken this work a stage further. They took 14 females and 21 males and measured their individual expenditure of energy while lying, sitting and standing under comparable conditions. Their assessment of energy was based on the analysis of expired air, which was collected in Douglas bags. Three of the subjects tested actually had metabolic rates which were more than 30% below the average of the group for all occupations, and one a rate of more than 24% above that average. These workers then selected for further study 6 subjects whose expenditure of energy differed most from the mean. The energy balance sheets of these 6 subjects were investigated for 7-14 days. The intake was measured by weighing the food, and the output by a time and motion study combined with measurement at the important occupations. It was found that for all activities these 6 subjects expended enormously different amounts of energy when compared one with another.

Booyens and McCance claim that these marked variations in expenditure of energy can 'explain well enough why some people require fewer calories to maintain their weight and others twice as many'. On the other hand they found that it did not follow that the person with a very low metabolic

skrywers voer aptytverskille aan as verduideliking van hierdie oënskynlike teenstrydigheid—maar hulle beweer darem ook nie dat die aansienlike verskille in energieverbruik enige rol speel by die basiese beheer van die aptyt nie.

Indien hierdie uitslae geheel en al aanvaar kan word, is daar blykbaar twee hoofsaaklike afleidings wat ons kan maak. Ten eerste: Die aansienlike maar onooglopende verskille in energieverbruik (gemiddelde metabolismespoed) kan ten volle rekenskap gee van die baie groot verskille in die reaksie van die liggaamsgewig van verskillende indiwidue op soortgelyke voedselinnames. 'n Mens moet egter nie daaruit aflei dat die laaste persoon met 'n lae gemiddelde metabolismespoed geneig is om vet te word nie, want by baie mense bewaar die aptyt vanself die ewewig. Ons kan natuurlik nooit die feit ontduik dat vetsug alleen kan voorkom as ons meer eet as wat ons liggame nodig het nie.

Die tweede gevolgtrekking is dat die gewone standaarde vir metabolismespoed glad te eng is. Booyens en McCance voer dit selfs verder en beweer dat ‚dit nog bewys moet word dat 'n basale metabolismespoed 30-35% onder die gemiddelde van 'n groep noodwendig abnormaal is'. Terloops, hierdie opvatting trek die ‚nuwe sindroom' wat Kurland *et al.*[6] en Tittle[7] rapporteer in twyfel. Hulle beskryf 'n toestand van lae metabolismespoed sonder hipotiroïedisme maar met vae klagtes oor slaapsug, vinnige vermoeidheid, senuweeagtigheid, prikkelbaarheid, gevoeligheid vir koue, hoofpyn, vae pyne en verminderde geslagtelike aktiwiteit. Hierdie skrywers maak aanspraak op 'n gunstige reaksie op tri-iodotironien, maar nie op tiroïed sikka of op tiroksien nie. Sommige geneeshere mag wel meen dat meer feite nodig is om die stelling van so 'n sindroom te staaf, veral nou dat Booyens en McCance beweer dat 'n lae basale metabolismespoed tog normaal kan wees.

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rate would necessarily tend to become obese. Two of their subjects with very low metabolic rates were exceptionally thin and did not have to worry about the food they ate. The authors explain this apparent discrepancy by difference in appetite—but they do not claim that the marked variations in energy expenditure play any part in the fundamental control of appetite.

If these results can be fully accepted there would appear to be two main conclusions to be drawn. First, that very considerable, but inapparent, differences in energy expenditure (mean metabolic rate) may fully account for the very great differences in the response of the body weight of different subjects to similar food intakes. It is not to be concluded, however, that everyone with a low mean metabolic rate tends to become fat, because in many persons the appetite produces an automatic adjustment. We cannot, of course, ever get away from the fact that obesity can only occur when the food intake is greater than the needs of the body.

The second conclusion is that the usual standards for metabolic rates are far too narrow. Booyens and McCance go so far as to say that 'it has still to be proved that a B.M.R. 30-35% below the average for the group is necessarily abnormal'. This concept, incidentally, may throw doubt on the 'new syndrome' reported by Kurland *et al.*[6] and Tittle,[7] who describe a state of low metabolic rate without hypothyroidism but with vague complaints of lethargy, easy fatigue, nervousness, irritability, sensitivity to cold, headache, ill-defined pains, and diminished sexual activity. These authors have claimed a good response to tri-iodothyronine, but not to thyroid sicca nor to thyroxin. Some may think that more evidence is needed in support of such a syndrome—particularly now that Booyens and McCance claim that the low B.M.Rs. may really be normal.

1. Widdowson, E. M. (1936): J. Hyg. (Camb.), **36**, 269.
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OPEN HEART SURGERY UNDER HYPOTHERMIA

WALTER L. PHILLIPS, F.R.C.S., M.R.C.P.

Cape Town

This article records 7 cases of congenital cardiac abnormalities which have been treated by 'open-heart' surgery under hypothermia. There were 4 cases of Fallot's tetralogy, 2 of pulmonary stenosis, and 1 of auricular septal defect. It was recognized that, whereas it was possible to cure the cases of pulmonary stenosis and auricular septal defect by operation, the condition of the 4 children suffering from Fallot's tetralogy could only be improved, but not cured, by this method, because the heart could not be 'open' long enough to permit of the repair of the ventricular septal defect. These 4 patients, however, were so severely incapacitated that the decision was made to attempt to improve the pulmonary blood flow by operation under hypothermia; open heart surgery under by-pass was not then available, and the ventricular septal defect could always be repaired at some future date.

All the cases had been assessed clinically and had been catheterized, and in 6 of them pulmonary stenosis was present, 3 showing definite infundibular chambers. The 7th case showed the presence of a large auricular septal defect, the flow across the defect being measured as 14 litres per minute. The hazards of 'open-heart' operation on the Fallot cases were recognized, particularly the danger of air embolism.

The experience derived from operating on these cases has been invaluable. One case was thought to have a very tight pulmonary valvular stenosis, and great anxiety was felt when the catheter failed to pass through the valve opening. The conclusion was that the valve opening was so narrow that

it was occluded by the catheter tip. The right ventricular pressure was very high. Pre- and post-operative tracings are reproduced to illustrate the findings (Fig. 2). In this case the plan of operation was to perform the pulmonary valvotomy through the pulmonary artery after inflow stasis had been produced. However, once the pericardium had been opened it became clear that the case was one of infundibular stenosis, the infundibulum being visible as well as palpable. As there was no ventricular septal defect there was no anxiety about letting air into the left side of the heart.

The surgical approach was similar in all the cases. The differences in technique are discussed with specific reference to the problems that were encountered.

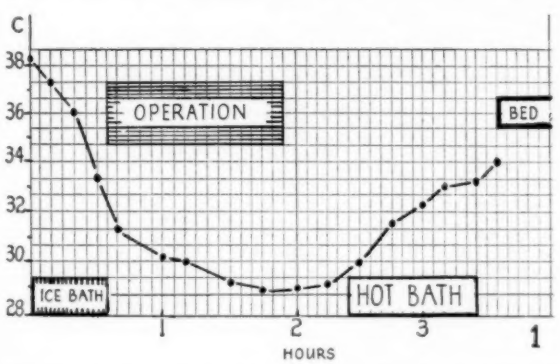
THE OPERATIONS

Premedication. Pethidine, chlorpromazine and scopolamine are given 1 hour before operation.

Anaesthesia. Induction is done with Pentothal and a relaxant. The vocal cords are then sprayed with Xylocaine, and once the endotracheal tube has been placed in position, gas, oxygen and ether are employed to maintain the anaesthesia.

Temperature Control. Careful temperature recordings are made on the thermocouple before hypothermia is started, and throughout the operation. This instrument is incorporated in an oesophageal tube which is inserted under anaesthesia.

*Hypothermia.** The anaesthetized patient is placed in a bath containing ice water at a temperature varying from 0° to 7°C, depending on the amount of ice placed in the cold water. Electrocardiograph leads are placed in position on the patient in order to observe changes on the oscilloscope and record them on film. The time taken to cool a patient depends on his weight. The average time for a 37-lb. child is about 45 minutes. The anaesthetist must try and prevent shivering,



and extreme care must be taken to ensure that the oesophageal temperature does not drop below 33°C. At this level the patient is removed from the bath, dried rapidly, and prepared for the operation (Fig. 1). The temperature will continue to drift lower after the operation has started, and again measures, even to the extent of re-warming, must be taken to avoid its dropping below 30°C. It is an advantage to have the patient lying on a water-warmed mattress so that the temperature can be raised if necessary.[2]

* The pioneer work was done by Bigelow.

Position of the Patient. The patient should lie in the supine position with the right arm abducted and the left arm at the side. The surgeon operates from the right side, with the two assistants on either side of the patient. The instrument tables are placed over the foot and to the sides of the operating table, from which position the theatre sister passes the instruments to the surgeon.

Intravenous Tubes. Intravenous tubes are used for the administration of intravenous anaesthesia as well as for the blood and saline transfusions. The arm veins and the long saphenous vein are chosen, and polythene tubing should be inserted through a needle into the veins; it can be maintained in position for as long as is necessary.

Operation Incision. A bilateral incision should be made over the 4th ribs, curving slightly round the breast regions, and passing from one axilla across the sternum to the opposite side. The skin and subcutaneous fat are separated, the position of the 4th rib is palpated, and the pectoral muscles are then divided. The periosteum of the 4th rib, which is cut from the axilla to the sternum, is then elevated, and the pleural cavity opened on the right side. The same procedure is carried out on the left side, but over the 3rd rib. The sternum is then divided obliquely across the mid-line to join up the two pleural incisions. The divided internal mammary vessels must be carefully ligatured. The incision is opened up by placing a rib-spreader between the divided edges of the sternum. When the spreader has been opened wider, the pericardium and thymus must be separated from the under surface of the upper part of the sternum. The thymus must be reflected upwards so that the great vessels above the pericardium can be clearly viewed.

Incision of Pericardium. A large pericardial flap is made, in the shape of an inverted U between the two phrenic nerves. This large tongue-shaped part of pericardium is then reflected downwards to cover the edges of the sternum, and can be kept in position with a couple of stitches.

Examination of Heart. A quick examination is made to ascertain whether there is any abnormality of the venous return, such as a left superior vena cava draining into the coronary sinus. The site of abnormalities such as an infundibular chamber or ridge must be noted, as well as whether pulmonary valve stenosis is present.

Mobilization of the Venae Cavae. The venae cavae must be dissected in order to pass tapes round them. The superior vena cava is readily exposed, and a tape is passed round it just proximal to the point of entry of the azygos vein. It is often more difficult to expose the inferior vena cava, because the pericardium has to be divided and dissected at the site where the vessel enters the pericardial cavity, and damage to its wall must be avoided. When the venae cavae have been exposed and the tapes have been placed round them, rubber tubing is placed over the tapes so that they can be pulled taut, thus occluding the vessels. Umbilical tape serves this purpose most satisfactorily.

Arterial Occlusion. The position of the transverse sinus can be readily determined; it separates the aorta and pulmonary artery in front from the atria behind. When this sinus has been identified, a large flat clamp should be placed in position and tested. Closure of the blades will achieve complete occlusion of the aorta and the pulmonary artery.

The operation site has now been prepared, and all is ready for inflow stasis and open heart procedures.

Preliminary Pressure Recordings. The appearance of the heart will often suggest the presence of an infundibular stenosis, an infundibular chamber, or pulmonary valve stenosis. In case of doubt, a cardiac catheter should be passed into the right ventricle and then into the pulmonary artery. Continuous recordings will demonstrate the presence of any of these abnormalities, as well as providing pressure records for comparison with post-operative readings. Although pressure readings are not essential, this comparison will provide a valuable guide to the success of treatment. Two stitches are placed in the right ventricular wall to act as retractors, and the cardiac catheter is introduced into the ventricle through a short incision in the myocardium.

Palpation of Atrial Cavity. The outstanding feature of a case of auricular septal defect is the increase in size of the right auricle. Pre-operative catheter investigation may have helped to show the exact site and size of the defect. The defect must still be palpated and a digital examination of the pulmonary outflow track from the right ventricle must be made. When the surgeon has confirmed that he is dealing with an 'ostium secundum' type of defect, the operation can proceed. If doubt exists the surgeon will decide against open-heart surgery under hypothermia, and the operation will have to be performed under by-pass conditions with a heart-lung machine. Repair of atrio-ventricular defects takes too long to permit of its being done under hypothermia.

The exploratory incision into the right atrial cavity is then closed, inflow stasis is instituted, and the operation for correction of the defect is commenced.

Inflow Stasis. All apparatus should be checked before the circulatory arrest is started, and all manoeuvres must be timed with a stopwatch. The two vena-caval tapes are tightened. The aortic and pulmonary artery clamps must be placed sufficiently far from the aortic valves to allow of the injection of Prostigmin. This clamp is placed across the two vessels about 15 seconds after the two vena-caval tapes have been tightened, because this time interval allows the heart to empty itself of most of its blood. Prostigmin in about 5 c.c. of normal saline is injected into the aorta, between the clamp and the aortic valves. This ensures that the Prostigmin, which reduces the liability to ventricular fibrillation, will enter the coronary vessels.

The Ventriculotomy. The incision is made into the right ventricle between the two stay sutures previously inserted, and must incorporate the small incision employed for the cardiac catheterization. This incision must be sited where it will cause minimum injury to the coronary vessels, and it must be below the position of any muscle ridge as seen in infundibular stenosis. This ridge can usually be palpated through the wall of the right ventricle, or it can be seen if there is a thin-walled infundibular chamber. The aim of the surgeon is to approach the obstruction either from a position directly above it or, preferably, from below. The incision in the ventricular wall can be lengthened upwards towards the pulmonary artery if necessary. When the ventricle has been opened, the edges of the incision are retracted, blood is removed by the suction tube, and the site is then examined.

Infundibular Stenosis (see Figs. 2 and 3). Infundibular stenosis may be due to muscular hypertrophy giving rise to a crista supraventricularis. This excess muscle can be cut away with a scalpel and scissors, care being taken that no small pieces of muscle are dropped into the ventricular chambers. In cases of Fallot's tetralogy a piece of muscle might conceivably be dropped into the left ventricle through the ventricular septal defect. The pulmonary valve should be inspected after the excess muscle tissue has been removed. If the valve is out of sight, dilators of a reasonable size should be introduced to determine the presence of any obstruction. Any valvular stenosis should be treated by direct incision of the stenosed area, the valve being opened to its normal size.

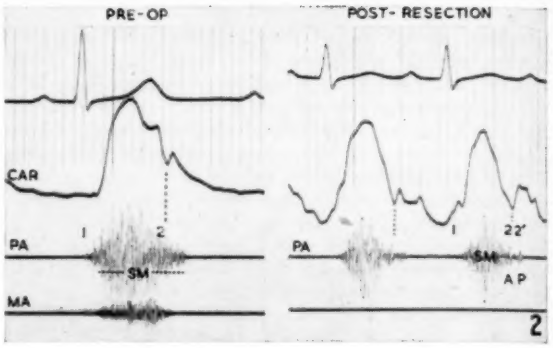


Fig. 2. Phonocardiograms in case of infundibular stenosis with intact ventricular septum.

A. The pre-operative phonocardiogram reveals a loud, very prolonged systolic murmur (SM) that extends well beyond and completely obscures the aortic second sound (2). The position of this sound is shown by the dicrotic notch of the carotid tracing (CAR), which denotes the end of left ventricular systole. Although the pulmonary second sound is so soft as to be unrecordable, the marked prolongation of the systolic murmur beyond the aortic second sound is sufficient indication of the prolonged duration of right ventricular systole and, hence, of the severity of the stenosis.[4] In this case, severe stenosis was predicted from auscultation.[5] This was confirmed by the high right ventricular systolic pressure of 225 mm. Hg (see Fig. 3).

B. Two weeks after the infundibular resection the murmur was found to be much shorter in duration, stopping at the aortic second, which it did not obscure and the width of splitting of the second sound was only 0·04 seconds. From these observations it was inferred that the duration of right ventricular systole had become much shorter, in keeping with mild to moderate stenosis, thus indicating a successful resection. This was confirmed by the post-operative cardiac catheterization, which shewed that right ventricular pressure had fallen to 63/0 mm. Hg. (see Fig. 3).

(From Vogelpoel and Schrire.[4])

Time Recording. The time must be recorded and called out to the surgeon in a clear voice by the anaesthetist. The recordings should state at half-minute intervals the passing of time since the commencement of inflow stasis. The intervals are therefore ½ minute, 1 minute, 1½ minutes, etc., and the surgeon has to see that his procedure is completed in the specified time of between 6 and 8 minutes. The surgeon will soon realize if he is taking too long. The anaesthetists' records will show that the ventriculotomy was completed 1 minute after inflow stasis commenced, and the resection of the infundibular ridge and inspection of the pulmonary artery have taken 3 minutes, i.e. that about 4 minutes elapsed before closure of the ventriculotomy was started.

Closure of the Ventriculotomy Incision. The ventricular cavity and the chest cavity are flooded with saline preparatory

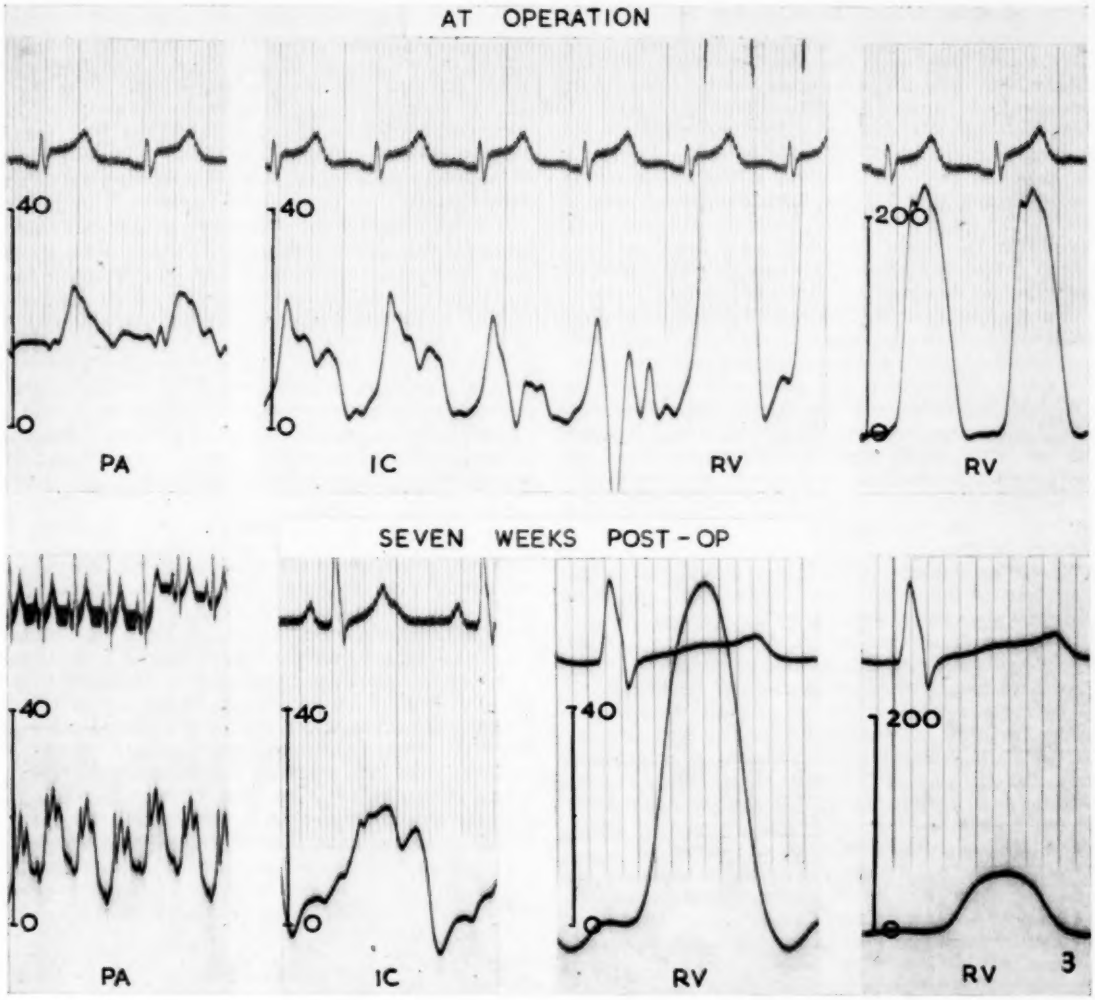


Fig. 3. Cardiac catheterization in case of infundibular stenosis with intact ventricular septum. At operation, the pressure in the pulmonary artery (PA) was 25/17, infundibular chamber (IC) 25/1 and right ventricle (RV) 225/0 mm. Hg. Cardiac catheterization 7 weeks after resection of the infundibular stenosis revealed a considerable fall in the right ventricular pressure (RV) to 63/0, with a pulmonary artery pressure (PA) of 25/15 and an infundibular chamber pressure (IC) of 22/1.

to closing the incision in the ventricle. The heart is pressed downwards towards the posterior mediastinum in order to immerse the whole organ in saline. During this manoeuvre feeble heart contractions will help to expel air bubbles, and as soon as the surgeon is satisfied that no air is trapped in the ventricles, continuous suture of the incision is commenced. This will take another minute or two and, when the incision is relatively well closed, the circulation must be restored. The operating table is tilted into the Trendelenburg position in the hope that, in the event of air entering the aorta, it will not enter the head region. The vena-caval tapes are released and, if air is present in the ventricles, the first beat will squeeze it through the incompletely closed incision in the muscle. After a beat or two the clamp over the aorta and the pulmonary artery can be released. The heart should then take over its normal rhythm. Resuscitatory measures should be started early if there is any evidence of abnormality of heart action.

Repair of the Auricular Septal Defect. The repair of the auricular septal defect must be done through the right atrium. The operative procedures described above apply to these cases, up to the stage of inflow stasis. The incision into the atrial wall is made immediately after the injection of Prostigmin into the aorta. The incision is about 3 inches in length, which allows the surgeon ample room in which to work as well as to see. The margin of the defect, the position of the

caval openings, and the entrance sites of any unusually situated pulmonary veins, are quickly identified. The defect must be closed, care being taken to avoid directing the flow of veins into the wrong atrium. Suturing of the defect can be done either by continuous or interrupted sutures. Throughout the procedure the anaesthetist should be calling out the time every half minute. All air must be expelled from the atrial chambers before the incision in the auricular wall is repaired. The normal cardiac circulation can be restored as soon as the surgeon is satisfied that there will be no leak of blood from the atrium. The repair can be completed while the heart is already beating. This operation has been well described by Sellors *et al.*[3]

Temperature Recordings. The anaesthetist should report the temperature from time to time. It will continue to drift downwards slowly while the chest is open, particularly during inflow stasis. The surgeon may derive some comfort from the fact that the undesirably low temperature will provide him a slightly longer operating time. The case of auricular defect described in this paper bore circulatory arrest for 10 minutes without ill-effect, the temperature having drifted to 28°C. The defect was of such a size as to require extra time to close it by continuous suture reinforced with some interrupted sutures.

Resuscitatory Measures. If the heart fails to beat properly, cardiac massage should immediately be started. As a rule the heart takes up a good rhythmic contraction, and when the anaesthetist reports the pressure of a pulse, the closure of the ventricular or auricular incisions can be completed. Any sign of a change in rhythm or in the force of contractions should serve as a warning of impending fibrillation, and a shock or two with a defibrillator should be applied. The heart should be beating at about 80 beats per minute, and cardiac massage may be necessary as an adjunct to the defibrillator. It is important to remember to massage the heart fast enough, and to continue the massage for a considerable time, even when recovery seems remote.

Re-warming the Heart. When the heart has recovered the pleural cavity and heart region should be flushed out with saline warmed to at least body temperature. Hot water should be circulated through a rubber water-bed underneath the patient.

Drainage Tubes. The cardiotomy incision having been closed and the heart rate restored, drainage tubes must be placed into both pleural cavities. These tubes should be connected with underwater drainage bottles to which negative pressure of about 15 cm. water has been applied.

The Thoracic Incision. The divided portions of the sternum must be approximated and held in position by stout catgut sutures, or with well-placed wire sutures. The chest wall is closed in layers, and one can dogmatically state that no attempt should be made to close the pericardium. The incision should be closed as quickly as possible and the entire area as well as the stab wounds for the drainage tubes are then treated with a Nobecutane spray, to make the incisions water-tight.

Total Body Re-warming. The patient is placed in a bath of hot water at a temperature of 40°C and kept there until the body temperature reaches 34°C. This temperature recording is again read on the oesophageal recording instrument. As soon as the temperature has reached this 34°C level, the patient is removed from the bath, dried off, and put to bed.

Post-operative follow-up. The post-operative follow-up is essentially the same as for any major thoracic surgical case, and this implies special nursing for the first 48 hours. Until normal body temperature has been restored, temperature recordings must be charted with the routine periodic examinations of pulse, respiration, and blood pressure.

RESULTS

Two deaths occurred in the 7 cases reported. One of these was a child who was severely ill with Fallot's tetralogy. The operation proceeded according to plan, a marked infundibular ridge was removed, but at the completion of the operation, the re-warming appeared inadequate, and it was not possible to restore a normal range of temperature for almost 6 hours. The cause of death was uncertain. The second death occurred in an adult patient in whom a pulmonary stenosis was treated by direct operation on the pulmonary artery. All went well until the third day, when he developed acute pulmonary oedema which failed to respond to restorative measures. Apparently the strict instructions about fluid intake had been relaxed, and it was stated that visitors had provided him with extra fluid in the form of cold drinks. His death was very sudden, and one is entitled to presume that the extra fluid intake was a contributory factor in the left heart failure.

The other cases have done well.

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A TEN-YEAR SURVEY OF CAESAREAN SECTIONS*

L. G. R. VAN DONGEN, M.Sc., M.D., M.R.C.O.G.

Department of Obstetrics and Gynaecology, University of the Witwatersrand, Johannesburg

Since the art and science of medicine was first practised changes have constantly taken place, either slowly or dramatically, but with a never-ending striving for improvement. We are today in an age of dramatic changes brought about by the wonderful discoveries of recent years, and these have affected the practise of obstetrics like every other branch of medicine. It was with this thought in mind that it was decided to analyse one small aspect of obstetrics at the Queen Victoria Hospital, Johannesburg. A 10-year period of Caesarean section was chosen, the period being from 1947 to 1956.

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Incidence

There has been a steady and progressive increase in the number of deliveries for the 10-year period 1947-56, the increase being mainly among the booked or antenatal-clinic cases rather than among the unbooked emergency admissions. The total number of deliveries in 1947 was 2,995, while 9 years later, in 1956, it had risen to 4,632. The total number of deliveries (booked and unbooked, hospital and district) for the 10-year period was 38,679.

During the same 10-year period 1947-56 the incidence of Caesarean section deliveries has likewise shown a gradual rise, actual and relative (Table 1). There were 786 Caesarian sections done during the 10-years—an incidence of 2·03%. The percentage of Caesarean-section delivery increased gradually till 1954 and then more steeply in 1955 and 1956. The relative incidence of Caesarean section in 1956 was 3 times as great as in 1947.

TABLE I. INCIDENCE OF CAESAREAN SECTIONS, 1947-56

Year	*Total Deliveries*	*Total Caesarean Sections*	*Percentage of Caesarean Sections*
1947	2,995	35	1·17%
1948	2,981	31	1·04%
1949	3,708	50	1·35%
1950	3,852	53	1·37%
1951	3,886	71	1·83%
1952	4,031	86	2·13%
1953	4,046	86	2·13%
1954	4,127	87	2·11%
1955	4,421	126	2·85%
1956	4,632	161	3·47%
Total ..	38,679	786	2·03%

Of the 786 sections performed, 15·14% (approximately 1/7th) were done on unbooked patients.

Age

A little under 5% of the patients delivered by section were very young—under 20 years of age, while just over 11% were 40 years or more (Table II). One has a natural tendency to avoid abdominal delivery in the very young patient out of regard to her future reproductive life; a large proportion of the sections done in this group were for cephalo-pelvic disproportion. On the other hand a patient over 40 years of age is nearing the end of her reproductive period of life, and the age here causes one to lean towards Caesarean section, particularly in the face of primiparity or relative infertility.

TABLE II. AGE DISTRIBUTION OF PATIENTS SECTIONED

Less than 20 years of age	38 (4·8%)
Between 20 and 29 years	341 (43·4%)
Between 30 and 39 years	318 (40·5%)
40 years or more	89 (11·3%)

Parity

Almost 40% of all the sections performed were on primiparae: primiparae 310 (39·5%), multiparae 476 (60·5%). Nearly half of the multiparae had had some previous operation on the uterus; no less than 100 of the 476 had undergone a previous classical Caesarean section with a previous delivery and a further 133 a lower-segment section (Table III).

TABLE III. PREVIOUS OPERATIONS ON THE UTERUS IN MULTIPARAE

Previous classical Caesarean section	100
Previous lower-segment Caesarean section ..	133
Previous Caesarean section, type unknown ..	2
Previous extensive myomectomy	1
Total	236 (49·6%)

Duration of Pregnancy

Not all sections were done at or near term, such conditions as placenta praevia and severe pre-eclampsia often demanding termination of pregnancy well before term was reached (Table IV). The postmature group of patients (i.e. 42 weeks or more) requiring section was made up of almost equal numbers of primiparae and multiparae (32 primiparae and 30 multiparae). In 26 (or 42%) of these cases an abnormal foetal position existed at the time of operation (occipito-posterior 18, breech presentation 2, brow 3, shoulder 2, face 1). This incidence of abnormal presentations is much above the average, and it is suggestive that they may have played some part in bringing about postmaturity. They certainly must have been an important contributory factor in causing delivery to be done by Caesarean section. The 2 main indications for section in this postmature group of patients were (1) disproportion in 30 of the 62 cases (48%), and (2) foetal distress in labour in 17 (or 27·4%) of the cases. That these should be the 2 commonest indications for section in this particular group will not come as a surprise. All 62 infants were born alive, but 2 died in the neonatal period, one infant dying from atelectasis and the hyaline membrane syndrome and the other being associated with a meningocele.

TABLE IV. DURATION OF PREGNANCY AT TIME OF SECTION

36 weeks or less	104 cases (13·3%)
37-39 weeks	227 cases (29%)
40 or 41 weeks	390 cases (49·7%)
42 weeks or more	62 cases (7·9%)
Not recorded	3 cases.

Foetal Presentation

The foetal presentations at the time of operation among the total number of 786 Caesarean sections done are shown in Table V. Thus in 15·4% (or approximately 1/7th of all the cases the foetus presented otherwise than by the occiput.

TABLE V. FOETAL PRESENTATION AT TIME OF SECTION

Occiput presenting	656	(83·5%)
Breech presenting	61	(15·4%)
Shoulder presenting	36	
Brow presenting	21	
Face presenting	3	
Presentation not recorded	9	

Time of Section in relation to Labour

It is a surprising fact that of the 786 patients sectioned a little more than one-half were not in labour. This group was largely made up of patients who had elective Caesarean section because of previous classical sections, disproportion and placenta praevia or pre-eclampsia where labour was not yet

TABLE VI. STAGE OF LABOUR WHEN SECTION DONE

Not in labour	398 (50·6%)
First stage	359 (45·7%)
Second stage	27 (3·4%)
No record	2

established. Of the Caesarean sections performed on patients in labour, the great majority were carried out during the first stage of labour and only a small number in the second stage (Table VI).

Indications for Caesarean Section

Though Caesarean section was originally intended to answer the problem of insuperable cephalo-pelvic disproportion, its use has been extended today to deal with a great variety of obstetric problems. In this analysis no less than 43 separate indications for section were found. Through the aid of blood transfusions, antibiotics and improved anaesthesia, Caesarean section has become a relatively simple and safe procedure. Because of this it has become the easiest—though not always the best—way out of a large number of obstetric difficulties.

TABLE VII. INDICATIONS FOR CAESAREAN SECTION

1.	Disproportion	273 cases (34·7%)
2.	Placenta praevia	118 cases (15%)
3.	Previous classical C/S	91 cases (11·6%)
4.	Elderly primipara plus other unfavourable factor	64 cases (8·1%)
5.	Foetal distress	60 cases (7·6%)
6.	Severe pre-eclampsia	37 cases (4·7%)
7.	Brow presentation	21 cases (2·8%)
8.	Diabetes	13 cases (1·6%)
9.	Prolapsed cord	12 cases (1·5%)
10.	? Rupturing L.U.S. scar	12 cases (1·5%)
11.	Long history of sterility	11 cases (1·4%)
12.	Uterine inertia plus maternal distress	10 cases (1·2%)
	Total	722 cases (91·85%)

At this stage it must be stressed that a conservative attitude should still be adopted towards delivery by Caesarean section for, though it offers an easy way out of an immediate obstetric problem, it is a major operation that carries a definite risk both for the mother and foetus, and it creates fresh obstetric problems for the future.

Of the 43 indications only the 12 commonest will be mentioned, which accounted for 722 (91·8%) of the 786 Caesarean sections done (Table VII). The remaining 31 indications were distributed among 64 patients and account for only 8·15% of the sections done. Here a very wide variety of indications were found, varying from a previously ruptured uterus to a cerebral tumour.

Disproportion, as can be seen from the above list, is by far the commonest indication for abdominal delivery. The figure of 273 cases sectioned for disproportion includes all the failed trials of labour as well as the repeat sections done for disproportion. Obviously, over a 10-year period an individual patient may have come back two or three times and may have featured as a Caesarean section on each occasion.

Placenta praevia has come to the fore as the second commonest indication for section, following the recent trends in the treatment of placenta praevia.

For fear of rupture of the old scar it has been our policy over the past few years to deliver all patients by the abdominal route who have undergone a classical Caesarean section at the previous delivery. This policy has made previous Classical section the third commonest indication in this series of cases.

Elderly primiparity has been universally accepted as an indication for Caesarean delivery because of the reduced time left to the patient in her reproductive life, because many of these patients do not labour well, and because there is an increased risk of a stillborn infant, often unaccountable, in this group. Certainly when there is some other unfavourable factor present as well, then the case for section becomes very strong.

Foetal distress in the first stage of labour was the indication for Caesarean section in 60 patients. The presence of meconium-stained liquor associated with a slow or irregular foetal heart-beat before full dilatation of the cervix was taken as an indication for immediate abdominal delivery. Of these 60 patients, 17 were postmature by 14 days or more. (Of the 786 sections performed, 62 were done in postmature patients, and the remaining 724 in patients who were not postmature. In the first small group 17 sections were done for foetal distress, i.e. 27·4% of the postmature group. In the larger group—not postmature—43 sections were done for foetal distress, i.e. only 5·9%. Thus foetal distress was 4 times more commonly an indication for section in thepostmature patients.)

It is of interest to study each of the indications over the 10-year period to see what has accounted for the increase in the number of Caesarean sections (Table VIII). The repeat Caesarean sections were mainly done for previous

TABLE VIII. INCIDENCE OF THE INDICATIONS FOR CAESAREAN SECTION

Indications	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	*Total*
1. Disproportion	12	12	18	23	29	24	23	31	49	52	273
2. Placenta praevia	3	3	7	6	10	17	14	13	23	22	118
3. Previous classical C/S	6	3	10	7	10	13	15	5	10	12	91
4. Elderly primiparae	3	2	10	12	9	3	7	1	8	9	64
5. Foetal distress	1	2	1	1	3	6	8	9	12	17	60
6. Severe pre-eclampsia	2	3	1	0	4	5	7	6	4	5	37
7. Brow presentation	2	0	0	0	2	0	5	2	1	9	21
8. Diabetes	0	0	0	0	0	4	3	3	1	2	13
9. Prolapsed cord	0	0	0	1	0	0	0	1	0	10	12
10. ? Rupturing L.U.S. scar	0	0	0	0	0	0	1	2	4	5	12
11. Sterility	1	0	0	0	0	3	1	3	0	3	11
12. Uterine inertia and maternal distress	1	1	0	0	0	0	0	4	0	4	10
13. All other indications for C/section	4	5	3	3	4	11	2	7	14	11	64
											786
Repeat C/section	10	12	17	15	20	28	27	24	36	47	

classical Caesarean sections or for disproportion, and a certain number would be included in group 13 in Table VIII—'other indications'. It will be seen that there has been a steady increase in the number of repeat sections done each year.

Table VIII shows that the increase in the Caesarean-section rate has not been due to any one particular indication. The most striking increase has taken place in the number of sections done for disproportion. This can hardly be due to cephalo-pelvic disproportion having become suddenly more common. It can be explained by the fact that repeat sections for disproportion have increased and that Caesarean section has been resorted to earlier in trials of labour. There has also been a steady increase in the use of section for the treatment of placenta praevia. This is in accordance with modern trends accepted in most schools.

Foetal distress in the first stage of labour has quite recently

come to the fore as an indication for urgent abdominal delivery. It is also of interest to note that in this series no Caesarean sections were done for diabetes before 1952; thereafter, it became accepted practice particularly if the patient was a primipara, if there was marked hydramnios present, or if the foetus was thought to be very large. Similarly, prolapse of the cord had usually been treated by vaginal methods, but recently resort has been made to section if the cervix was not yet fully dilated.

In 12 cases repeat sections were performed because of persistent pain over the lower segment during the first stage of labour in a patient who had had a lower-segment Caesarean section at a previous delivery. This led to doubts as to the safety of the old scar. In 4 of these 12 sections a rupturing lower segment scar was found.

There has also been an increase in the number of sections done for 'miscellaneous' reasons, particularly in the last 2 years of this series, though this group represents only a small proportion of all the sections done.

Type of Section

In the very great majority of cases a transverse lower-segment Caesarean section was performed, though a few cases were delivered by the vertical DeLee incision, while just over 5% of the cases were delivered by means of a classical Caesarean section (Table IX). Of the 41 classical sections 24 were done in the first 3 years of this series. Thereafter, classical sections were not done so frequently, the usual indications being a much weakened previous classical scar, placenta praevia, previous repair of a vesico-vaginal fistula, cervical fibroids, and carcinoma of the cervix.

TABLE IX. TYPE OF CAESAREAN SECTION PERFORMED

Transverse lower-segment Caesarean section ..	729 (92·7%)
DeLee lower-segment Caesarean section	16 (2·0%)
Classical Caesarean section	41 (5·1%)

Type of Anaesthesia

Of the 786 Caesarean sections performed, general anaesthesia was used for 729 (92·7%), local plus general for 4, local anaesthesia for 2, spinal anaesthesia for 3, and caudal anaesthesia for 2.

Condition of Previous Section Scars

As mentioned earlier, of the 236 multiparae who had had some previous operation on the uterus, 100 had had a previous classical Caesarean section, and 133 a previous lower-segment Caesarean section. In 2 patients no information could be obtained and 1 patient had had an extensive myomectomy done previously.

Of the 100 multiparae who had had a previous classical section, no information on the scar was available in 33 cases; the findings in the remaining 67 cases are shown in Table X, which illustrates the relatively high incidence of unsatisfactory scars. It may be that in all the 33 cases where no comments were available the scars were good, but one cannot escape from the fact that there were 6 rupturing scars in the group. In 5 of these 6 cases pain and tenderness were present and haematomata were found over the old scars; the 6th actually ruptured at operation. It must be stated here that 4 patients actually presented with ruptured uteri during this 10-year period, the rupture having taken place through a previous classical scar. These cases have not been included under this analysis of Caesarean section.

TABLE X. CONDITION OF PREVIOUS CLASSICAL SCARS

Condition of Scar	*Patient in Labour*	*Patient not in Labour*	*Total*
Good scar	8	23	31
Moderate furrowing	3	5	8
Marked furrowing	3	4	7
Very thin weak scar	7	8	15
Rupturing scar	0	6	6
			67

Of the 133 patients who had had a previous lower-segment Caesarean section, in 45 no information was available as to the state of the old scar. The findings in the 88 cases, in which information was available are shown in Table XI.

TABLE XI. CONDITION OF PREVIOUS LOWER SEGMENT SCARS

Condition of Scar	*Patient in Labour*	*Patient not in Labour*	*Total*
Excellent scar (not seen) ..	10	19	29
Good scar (seen)	13	20	33
Wide fibrosed scar	1	3	4
Very thin weak scar	7	10	17
Rupturing scar	4	1	5
			88

Again, it may be that in the 45 cases where no information was available the old scar was good and satisfactory, but nevertheless in 5 cases we definitely know that the previous lower-segment scar was rupturing; 4 of these patients were in labour and the 5th was not in labour. All presented with persistent lower abdominal pain and had great tenderness on palpation. At operation haematomata were found in and over the old scar. This finding comes as a surprise, for one had not expected such a high rate of unsatisfactory lower-segment scars; it is well above the average figures published and taught concerning rupture of scars from lower-segment Caesarean section.

The patient who had had the previous extensive myomectomy was found to have an excellent uterus with no evidence of any weakness.

The above findings confirm that the lower-segment scar is safer than the classical scar in a subsequent pregnancy, but not quite as much safer as we had previously believed. It also brings to our notice very forcibly that any Caesarean-section scar imposes a definite weakness on the uterus that may cloud the patient's future reproductive life.

Results of Caesarean Sections

The results of the 786 Caesarean sections were as follows: 783 infants born alive (there were 7 pairs of twins); 3 maternal deaths (a maternal death rate of 0·38%); 10 stillbirths (a stillbirth rate of 1·27%); 37 neonatal deaths (a neonatal death rate of 4·7%). The total foetal wastage was therefore 5·97%.

The first maternal death occurred in a primipara age 24 years who was admitted as an unbooked case after being in labour for approximately 70 hours. She was a severe pre-eclamptic and foetal distress was present. She died 3 hours

after Caesarean section from acute cardiac failure with pulmonary oedema. The second maternal death occurred in a primipara aged 46. She had been in labour for 4½ hours when section was done. During the operation she inhaled vomitus which caused obstruction to the air passages and death ensued on the table. The third maternal death occurred in a para-3 aged 38 years. She had been sectioned for placenta praevia with foetal distress. She collapsed half an hour after the section and died. The post-mortem findings were those of shock.

To obtain a stillborn infant at Caesarean section is always a great tragedy, though it is not always entirely avoidable. The 10 stillborn infants in this series were as follows:

3 were cases of foetal distress in labour.
2 were the second of twins (one macerated).
2 were very premature infants associated with severe pre-eclampsia.
1 was associated with a central placenta praevia that was bleeding profusely.
1 presented as a brow in labour and was found to be a hydrops foetalis.
1 was associated with an elective repeat Caesarean section for disproportion. The cause of the stillbirth was doubtful.

The 37 neonatal deaths brought the foetal wastage up to 5·97%. It is a noteworthy fact that 30 of the 37 neonatal deaths occurred in infants who were 36 weeks or less (81%) which indicates that prematurity played a major role in bringing about these deaths. Practically all of the premature infants were associated with pre-eclampsia or with placenta praevia.

Of these neonatal deaths 30 were associated with 104 Caesarean sections done at or before the 36th week of pregnancy—a neonatal death rate of 28·85%. This high neonatal death rate must be borne in mind whenever contemplating section at or before the 36th week of pregnancy.

Sterilization

Of this series of patients 98 (or 12·5%) were sterilized at the time of section; 27 were sterilized after their first Caesarean section, usually because of such conditions as severe essential hypertension, chronic nephritis and grande multiparity; 39 were sterilized after their second section; and 32 were sterilized after their third section.

CONCLUSIONS

1. This analysis illustrates the definite trend towards solving more of our obstetric difficulties by Caesarean section. This trend must be examined critically, for it creates its own peculiar problems. The first of these is that, with more sections being done, more repeat sections will also be done in the future. This is unlikely to affect the European population of South Africa to any great extent, because there are reasonable antenatal and midwifery services available for their use. For the African population, however, the picture is different, because there is not an adequate antenatal and midwifery service available to them. An African patient, therefore, may not have the benefit of the special care and attention that a subsequent pregnancy and delivery demands.

Secondly, once repeat section becomes necessary, the patient's subsequent family is almost invariably limited.

Thirdly, as we perform more and more Caesarean sections to solve our obstetric problems, so we lose more and more 'the Art of Obstetrics'. This would appear to be part of the changing face of modern obstetrics.

2. Analysis of the previous Caesarean-section scars confirms that the lower-segment scar is a safer scar than that of the Classical-section, but not so much safer as we had previously thought. It also demonstrates that a Caesarean-section scar imposes a definite weakness on the uterus in perhaps a much larger proportion of patients than we had previously believed.

3. Further evidence is forthcoming to confirm the increased danger of placental insufficiency in postmature pregnancies. One should also note the higher proportion of abnormal presentations which was found in the postmature group of patients that were delivered by section.

4. The high neonatal death rate must be remembered in all Caesarean sections performed at or before the 36th week of pregnancy.

5. This analysis has touched only on the obvious points associated with Caesarean section. It has shown, however, that there are numerous aspects of this subject that still have to be investigated in greater detail. This must be done before we can hope completely to assess the present-day impact of Caesarean section on obstetrics.

INVESTIGATION INTO THE CONTROL OF TRACHOMA IN SEKHUKUNILAND

JOHN A. PRATT-JOHNSON, M.B., B.CH. (RAND), D.O. (R.C.P. & S.), F.R.C.S. (EDIN.)

and

JURIE H. W. WESSELS, M.B., B.CH. (RAND), D.O. (R.C.P. & S.)

Jane Furse Memorial Hospital, Sekhukuniland

Sekhukuniland is a Native reserve in the North-Eastern Transvaal, lying approximately in the middle of a triangle formed by Lydenburg, Middelburg and Pietersburg. The population is over 160,000 and consists of the Bapedi Bantu tribes.

N. L. Murray[1] in his thesis on the geographical distribution of trachoma in South Africa emphasized this particular area as being one of the worst in the country. In a survey[2] carried out in Sekhukuniland in 1952 trachoma was found in 94% of a random sample of children. The excellent thesis of R. St. H. Warren[3] based on many years' work at this hospital placed the diagnosis of trachoma beyond doubt; his statistics showed a 97% incidence among the Bapedi over the age of 2 years. It seems unnecessary in the face of this proven and, one hopes, accepted fact that

trachoma is endemic in Sekhukuniland, to waste time and space merely stressing this only too obvious revelation.

In this paper, we are concerned with the explanation of an extraordinary discrepancy in the incidence of trachoma on the Sekhukuniland 'Flats' as compared with the plateau of the nearby Lulu mountains. We hope to apply our results and conclusions to the public-health control of the disease.

SURVEYS ON THE SEKHUKUNILAND FLATS

Sekhukuniland 'Flats' is a word coined for want of a better one, for this territory is essentially hilly, with ground as high as 6,000 feet. The changes of altitude of the general level of the ground are gradual, although koppies project irregularly all round.

Material

Surveys were held at 9 kraals: Knwane, Nchabeleng, Mohlaletsi, Magnet Heights, Mphanama, Malegale, Probeeren Mamone and Mattlala. These particular places were chosen in an attempt to obtain a cross-section of the population. In each survey all the local school children and some of the adult population were examined.

Results

A total of 2,096 people were examined over the age of 2 years. The statistics are tabulated below:

Total number of cases	2,096
Incidence of trachoma	100%
Incidence of activity	44%
Incidence of Herbert's pits	80%
Incidence of follicular type	40%
Incidence of trichiasis	7%

We were able to diagnose trachoma by naked-eye examination in 98% of all cases. In the remaining 2% who seemed, naked-eye, to be free of trachoma, a typical pannus was seen in every case when examined with a loupe.

Flies plagued us at all kraals where surveys were held. A more daring, persistent and aggravating type of common housefly we have never before experienced. It was commonplace to see as many as 20 flies sitting on a child's face dabbling in the mucoid discharges from nose or eye or clustered on the sores of impetigo (Fig. 1). Each patient brought a new swarm of flies to greet us. Sometimes the interruptions to expel flies from one's nose and eyes were so frequent that it was difficult to keep pen to paper long enough to write down the patient's name, age and address. The complacent attitude of the local inhabitants towards the flies is readily understood; a life devoted to driving flies out of one's eyes, nose, mouth and food, would soon result in a nervous breakdown as the battle was gradually lost. Fly tolerance and all that goes with it allows a more constructive existence to continue until the complications of trachoma and other fly-spread diseases take charge. Association of ideas rather than coincidence would probably account for the Bapedi word for eyelash and fly being almost identical. *Dinthsi* (pronounced *Dientsh*) means a fly, whereas *Dinthsee* (pronounced *Dientshey*) means an eyelash.

Fig. 1. A common sight on the Sekhukuniland 'flats'. The picture speaks for itself—a sight for sore eyes!

Water Supply. In spite of the plentiful water in the Lulu mountains, the Natives on the Flats suffer greatly from drought. Within half a day of substantial rainfall in the mountains, a river flowing over the Flats will dry up completely, and the Natives are then compelled to seek water by digging in the dry river bed (Fig. 2).

Fig. 2. Young Bapedi woman digging for water in dry river bed 5 miles from the foot of the mountain, where the river is a substantial and fast-flowing stream.

THE LULU MOUNTAIN PLATEAU SURVEY

The enchanting mauve horizon of the Lulu mountains some 11 miles distant from the hospital, coupled with the somewhat suggestive name, prompted us to explore this range. Beauty may be skin deep, but this in no way applies to the Lulus, where we found a haven flowing with fresh water and practically free from flies. We felt compelled to revisit the mountain equipped to carry out an eye survey.

Material

The inhabitants of the Lulu mountains are primitive and isolated, and often ran away as we approached. They do not appear to mix with the Bapedi on the

'Flats' and rarely, if ever, leave their mountain plateau. The plateau is very well watered by streams and springs By our own observation and from the questioning of the inhabitants by our accompanying two Bapedi medical orderlies, we established that their crops and diet were identical with those of the 'Flats' despite the excellent water supply.

Our survey covered about 15 miles of the Lulu mountains between Maila and Schoonoordt, and included 97 people above the age of 7 years taken at random at 10 of the small kraals lying in that area. Ninety of those examined had lived all their lives on the Lulu mountains. The remaining 7 consisted of 5 schoolboys attending a school on the flats, a widely-travelled and well-known witch-doctor, and a woman who before her marriage lived on the Flats. On examination these 7 were all found to be suffering from trachoma.

We were unable to find a single case of trachoma among the 90 permanent residents (our examination included the use of a corneal loupe). Where was the border-line between the trachoma-ridden population of the Flats and the completely trachoma-free population of the Lulu mountain plateau, or was there possibly a gradual transition?

In our attempt to find an answer to this question we planned our next survey at Magolego, a kraal

Fig. 3. Photograph taken from edge of the Lulu mountain plateau, where the incidence of trachoma is *nil*. Arrow indicates Magolego Kraal, where the incidence of trachoma is 100%.

situated at the immediate foot of the mountain. The mountain rose steeply immediately behind Magolego until it reached the plateau (Fig. 3). This is a typical feature of this range, and no kraals are found between those at the foot of the mountain and those situated on the plateau.

Survey at Magolego and Comparison of Results

We examined 50 adults taken as a random sample of the 300-strong population of the village. The incidence of trachoma was 100% but the incidence of activity was only 6% as compared with 44% on the Flats proper. A plentiful water-supply was available from near-by mountain streams. The swarms of flies were in no way different from those on the Flats proper.

We present in tabular and diagrammatic form a summary of the important points in our surveys:

	Flats	*Magolego*	*Lulu Mts.*
Trachoma ..	100%	100%	0%
Activity	44%	6%	0%
Flies	Swarms	Swarms	Occasional one
Water	Shortage	Plentiful	Plentiful
Diet ..	..Essentially the same at all places		

Note

1. A plentiful supply of water where the flies were as plentiful as on the Flats cut down the percentage of active cases.
2. A plentiful supply of water where flies are occasionally seen is a combination which is not associated with trachoma.
3. The same diet was common to all groups considered.

Conclusion and Discussion

We conclude from the results of our investigations that the incidence of trachoma in Sekhukuniland depends on 2 factors, the prevalence of swarms of flies which directly convey the infection, and the acute shortage of water which prevents minimal hygienic precautions.

We found no evidence to support the theory that malnutrition plays a major part in the etiology and spread of trachoma. We were unable to recognize the condition of so-called pseudo-trachoma.

THE CONTROL OF TRACHOMA IN SEKHUKUNILAND

1. *The Provision of Adequate Water Supplies*

The Lulu mountains, where streams and springs abound provide an obvious catchment area. Strategically placed dams would prevent much of the present adequate rainfall from going to waste. What a tragedy it is to see a fast-flowing river dry up completely within half a day of substantial rainfall in the mountains.

2. *The Control of Flies*

This is a more difficult, but still possible, task. Because of the Bapedi's ignorance of the principles of sanitation the veld surrounding kraals is used as open latrines. The cattle—the Natives' wealth—are naturally herded next to the kraals where the people live. This state of affairs provides unlimited breeding-grounds for the fly.

One often feels that the energy and money spent in the education of the backward Native in South Africa are misdirected; for example, when one is constantly meeting local adolescents who, although proficient in arithmetic, algebra, reading and writing, appear quite ignorant of the enormous good they could do by converting the cattle manure into compost for the lands. The fact that flies convey disease would be received as a joke or a fairy tale.

The use of modern insecticides, coupled with a few principles of hygiene and common sense, would be the answer to this aspect of the problem.

Why so few Flies on the Lulu Mountain Plateau?

The only explanation we can suggest for the scarcity of flies and absence of trachoma is that the abrupt

change of altitude must in some way interfere with fly-life. The cattle possessed by the Lulu mountain inhabitants are kept in kraals adjoining the dwellings, and the veld is used as open latrines; hence there would appear to be the same adequate breeding grounds available as on the Flats and at Magolego.

It is interesting to note that altitude has formerly been suggested as a possible deterent to the progress of trachoma. Doralone[4] remarked that, as trachoma heals spontaneously at certain altitudes, a garrison town should be created at high altitude for the isolation of trachomatous people. Doralone's inference was hotly contested by Morax and also by Hirschberg,[5] who demonstrated trachoma at an altitude of 9,000 feet in Colorado.

It would appear that in Sekhukuniland it is the *sudden* change in altitude which is significant. The actual height in feet above sea-level seems to have little influence, for many parts of the Sekhukuniland Flats are indeed as high as the Lulu mountain plateau. Possibly it is the sudden change of altitude that is responsible for the rarity of trachoma in Basutoland—the Switzerland of South Africa.

The Treatment of Active Trachoma with Antibiotics

Experience in the treatment of active trachoma in this hospital has shown two important points:

1. Sulphonamides given parenterally and antibiotic ointment used locally arrests active trachoma and rapidly clears all evidence of the commonly associated secondary infection.

2. The records of this hospital show that this treatment is futile. Many children are treated as many as 4 times during the summer for sub-acute mucopurulent conjunctivitis. Each time treatment has included a full course of parenteral sulphonamides as well as unguentum albucid. Is it possible that a strain resistant to this therapy has been developed? This would not appear to be the case, since all cases treated in hospital, approximately 25 a week, respond immediately to this therapy.

Whether reinfection by flies includes the trachoma virus, or whether it is confined to commonly associated organisms such as the Koch-Weeks bacillus, we are unable to ascertain. It appears that most emphasis should be laid on the prevention of trachoma by an attack on the fly plague and the provision of an adequate water-supply. In the light of our investigation, it would be total lack of insight to attempt to combat trachoma by drug therapy alone.

The Notification of Trachoma

Three previous surveys by ophthalmologists in Sekhukuniland have reported on the trachoma incidence of over 90% in the population of more than 160,000. Recently district surgeons in the area have been urged to notify every case of trachoma on form 180b. If it took 5 minutes to complete the form for each case this would involve 10,000 hours of a doctor's time, in an area where doctors are at a premium, and it is difficult to appreciate the precise idea behind all this.

SUMMARY

A survey of cases of trachoma in Sekhukuniland is discussed and it is shown that this disease occurs in 100% of the population of the 'Flats'.

It is found that the disease does not occur in the permanent inhabitants of the plateau on the neighbouring Lulu mountains. The explanation of these facts may be found in the lack of water and the prevalence of flies on the Flats. Where the mountain dwellers live, on the other hand, there is no lack of natural sources of water and only a few flies are found. The fly is indicated as the carrier of the virus and the lack of water for washing as an important secondary cause.

OPSOMMING

'n Opname van gevalle van trachoom in Sekhukuniland word bespreek en daar word aangetoon dat hierdie siekte by 100 persent van die bevolking van die ‚Vlaktes' voorkom.

Daar is gevind dat die toestand nie voorkom by die permanente bewoners van 'n plato geleë op die aangrensende Lulu-berge nie. Die oorsake vir hierdie feite word gesoek in die gebrek aan water, en in die veelvuldigheid van vlieë op die Vlaktes. Die bergbewoners daarenteen het geen gebrek aan natuurlike waterbronne nie, en slegs enkele vlieë word daar gevind. Die vlieg word as draer van die virus bestempel, en die gebrek aan waswater as 'n vername bykomende oorsaak.

We should like to express our thanks to Dr. W. J. L. Downing, Medical Superintendent of the Jane Furse Memorial Hospital, for permission to publish this paper, and to the whole staff of this hospital for their help. We are particularly grateful to Bapedi Medical Orderly Godfrey Sekhukuni for his assistance.

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ASIAN INFLUENZA IN SOUTH AFRICA

A LABORATORY AND CLINICAL STUDY OF AN OUTBREAK ON THE SIMMER AND JACK MINE

M. WESTWOOD, B.Sc.
South African Institute for Medical Research
P. SMIT, M.B., CH.B., D.T.M. & H.
Group Research Medical Officer, New Consolidated Gold Fields
D. OBERHOLZER, M.B., CH.B.
Assistant Senior Medical Officer, Simmer & Jack Mine

In South Africa in 1957 influenza first occurred during the late autumn and early winter months—April to June—when medical practitioners reported an increase in respiratory illnesses amongst the European population. Unfortunately, as influenza is not a notifiable disease statistical support is not available but the outbreak appeared to be of epidemic proportions and specimens were received in the laboratory from all provinces of the Union.

Virus was isolated from 3 of these specimens and from the lung exudate of a woman who died suddenly of a fulminating pneumonia on 20 June. The strain isolated was the same as an Influenza A-prime strain isolated in Holland in 1956 and designated by the World Influenza Centre A/Nederlands/36/56.

This outbreak appeared to have no effect on the course of the epidemic of Asian influenza which followed a few weeks later. The Asian strain of influenza virus had appeared in Hong Kong and Singapore in April 1957 and spread rapidly throughout the East. The first intimation of its occurrence in South Africa was from the gold mines near Johannesburg, where large numbers of the African labour force were suddenly attacked by a mild respiratory illness resembling influenza. Laboratory confirmation followed soon after the mine medical officers had provided material for investigation.

As this virus was a new antigenic variant it was anticipated that influenza might reach pandemic proportions and precautionary measures were taken by all health authorities to control the spread of the disease. Provision was made for the hospitalization, nursing and feeding of large numbers of patients and for the vaccination of medical officers and nursing staff.

This report covers the epidemic amongst 109,961 African labourers employed by the three Mining Groups, New Consolidated Gold Fields, Anglo-Vaal, and General Mining, with a more detailed report on the Simmer & Jack Mine and the laboratory findings in 6 cases studied.

This epidemic of Asian influenza was responsible for a great increase in the incidence of respiratory infections in the African labour force of the gold mines, as is shown in Fig. 1. The epidemic was sudden in onset and of about 4 weeks' duration. Fig. 2 shows the day on which the maximum number of cases occurred at each of the 21 mines in this group. It can be seen that while in one mine the peak of admissions was on the 1st day, in most of them the peak was on the 5th day.

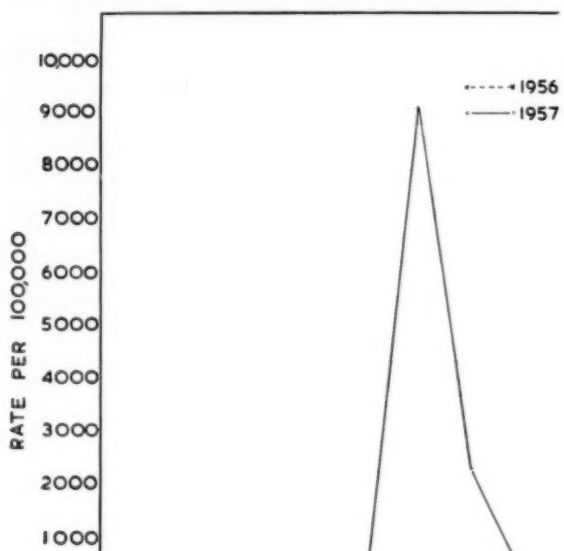

Fig. 1. Influenza in the gold-mining industry.

Fig. 2. Showing day on which maximum number of cases occurred (by mines).

During an epidemic of this nature it is difficult to distinguish between true influenza and other respiratory illnesses without laboratory confirmation of each case. For this reason only those cases which were detained for 24 hours or longer have been included in this report, although it is fully realized that many of the one-day illnesses were cases of influenza. Table I illustrates the morbidity rates on the various mines, and it is

TABLE I. INCIDENCE OF INFLUENZA AT 21 MINES

Mine	Total Complement	Cases of Asian Influenza	% of Complement with Influenza
A	6,581	1,102	16·74
B	5,283	480	9·08
C	5,563	646	11·61
D	5,047	218	4·32
E	4,267	279	6·54
F	5,426	948	17·47
G	2,798	281	10·04
H	1,157	90	7·78
I	6,668	494	7·41
J	1,562	180	11·52
K	681	75	11·01
L	7,777	963	12·38
M	4,833	396	8·19
N	8,373	1,780	21·24
O	11,771	2,731	23·20
P	2,241	501	22·36
Q	7,175	1,809	25·21
R	6,718	704	10·48
S	6,794	1,414	20·81
T	1,957	168	8·58
U	7,289	1,757	24·10
Total	109,961	17,034	15·49

% hospitalized = 58·8, rest bedded in Compound.

interesting to note the marked variation irrespective of the size of the mine. There appears to be no obvious explanation for this variation; a study of the period of employment and the area of tribal origin of the individuals appeared to be of no significance.

The clinical picture in most cases was similar. The patients complained of cough—usually non-productive—pain in the chest, headache, sore throat, and generalized body pains; a number of the patients felt depressed and showed loss of appetite. Pyrexia in most cases was of sudden onset, varying between 100°F and 104°F, and had dropped by the 2nd or 3rd day of illness. In 75% of cases clinical findings were *nil* apart from fever. More severe cases appeared to predominate later in the epidemic; these showed chest signs and prostration was great, while epistaxis was frequently noted. Relapses were few and may possibly be accounted for by superimposed infections. Most cases were discharged between the 3rd and 6th days, but a few were detained for 14 days.

Only 3 deaths were reported; autopsy showed one of these to be due to lobar pneumonia and 2 to bronchopneumonia. These may well have been primary cases of influenza but no laboratory confirmation was sought

CLINICAL HISTORIES OF THE 6 CASES STUDIED

Case 1. *Coy. no* 11048

Temperature on admission 102°F, rose to 103°F the following day but dropped to normal by the 3rd day. Complained of headache and chest pains, there were no physical signs on examination. Discharged after 8 days in hospital. Gargles and blood samples were obtained on the 3rd day of illness, when the temperature was 101·4°F.

Case 2. *Coy. no.* 13058

Temperature on admission 100°F, dropped to normal on the 3rd day of illness and rose again on the 4th day. Complained of chest pains and cough. There were no physical signs on examination. Was discharged after 7 days in hospital. Gargles and blood samples were taken on the 3rd day of illness.

Case 3. *Coy. no.* 12584

Temperature on admission was 104°F, dropped to normal after 2 days. Was discharged after 6 days in hospital. Gargles and blood samples were obtained on the 2nd day of illness.

Case 4. *Coy. no.* 2036

Temperature on admission 102°F. Dropped to normal by 3rd day. Complained of chest pains, headache and cough. No physical signs on examination. Was discharged after 6 days in hospital. Gargle and blood obtained on 2nd day of illness.

Case 5. *Coy no.* 12601

Temperature on admission 101·2°F. Dropped to normal by 2nd day. Complained of chest pains, cough and headache. Was discharged after 5 days in hospital. Gargle and blood were obtained on the 1st day of illness.

Case 6. *Coy. no.* 10029

Temperature on admission 101·2°F dropped to normal by 3rd day. Complained of chest pains, headache and cough. Was discharged after 6 days in hospital. Gargle and blood obtained on 1st day of illness.

All cases were treated with 1 c.c. of Flocillin daily.

Fig. 3 shows temperature chart from case 1 (Coy. no. 11048), the only case which gave negative results by haemagglutination-inhibition titration of acute and convalescent sera. Egg inoculation and tissue culture of this gargle did not yield virus. Fig. 4 shows the temperature chart of case 6 (Coy. no. 10029), from whom virus was isolated on the first day of illness.

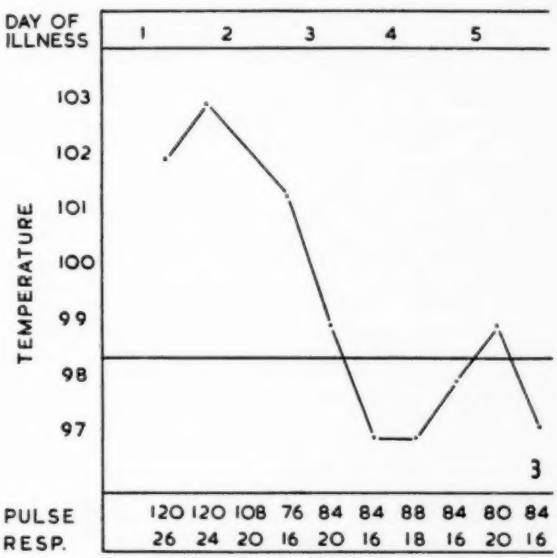

Fig. 3. Temperature etc., case 1 (Coy. no. 11048).

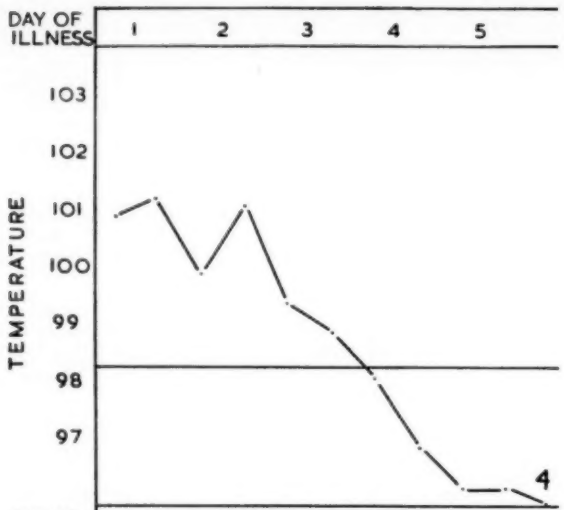

Fig. 4. Temperature etc., case 6 (Coy. no. 10029).

LABORATORY INVESTIGATIONS

Material. On 19 July gargles and blood samples were obtained from patients in the Simmer & Jack Mine Hospital; 6 cases were chosen, 2 on the 1st day, 2 on the second day, and 2 on the third day of illness. The patients gargled in saline, which was added to an equal quantity of broth and transported to the laboratory in a flask containing ice. Gargles which could not immediately be investigated were stored at −20°C. Further samples of blood were obtained from these patients after an interval of 3 weeks.

Egg Inoculation. The gargles, after addition of antibiotics, were inoculated into the amniotic cavities of 12- or 13-day-old embryonated hen's eggs, which were incubated for 5 days at 37°C. For allantoic inoculation 10- or 11-day-old embryonated eggs were used. All fluids were given 4 blind passages in the amniotic cavity before being discarded as negative.

Tissue Culture. In addition, 0·5 ml. of the gargle was inoculated into each of 3 tubes of monkey kidney monolayer cultures from which the growth medium of Lactalb. hydrolysate+5% horse serum had been removed. The tubes were then returned to the revolving wheel at 37°C for 30 minutes before the addition of 1·5 ml. of maintenance medium consisting of Parker 199 without serum.

Mouse Inoculation. Mice of 8-10 g. weight were inoculated by the intranasal route under light ether anaesthesia with 0·05 ml. of undiluted allantoic fluid from 4th and 5th passage material. The toxicity of the strains was investigated by the method of Henle and Henle,[1] by (1) the intravenous inoculation of 1 ml. quantities of undiluted infected allantoic fluid, (2) by intracerebral inoculation of 0·03 ml. quantities of undiluted infected allantoic fluid, and (3) by intraperitoneal inoculation of 1·0 ml. quantities of infected allantoic fluid.

Haemagglutination and *haemagglutination-inhibition* titrations were carried out in plastic trays with a chick red-cell suspension of 0·25% in saline.

Virus Strains and Antisera. The A/Singapore/1/57 strain used as the Asian influenza prototype strain was obtained from the World Influenza Centre, Mill Hill, London. Ferret antiserum to the strain was obtained by intranasal inoculation of a 10^{-2} dilution in broth-saline. The ferrets were bled before inoculation and again 2 weeks later. Other virus strains and their antisera were obtained from Phillips-Roxane, Antwerp, and consisted of (1) A/Nederlands/36/56 and (2) B/Denmark/2/53 or B/Australia/43.

Sera were treated with *V. cholerae* enzyme according to the method of Mulder *et al.*[2]

RESULTS

Virus was obtained from only 2 cases, viz. case 5 (Coy. no. 12601), and case 6 (Coy. no. 10029), from whom gargles had been obtained on the first day of illness. These strains were found to conform in general characteristics to those studied by Jensen[3] and Meyer *et al.*[4]

Amniotic Inoculations. Guinea-pig and human group-O red blood-cells were not used to test the first harvest of amniotic fluids, which were negative when tested with fowl red blood-cells. The harvest from the 2nd passage, however, showed haemagglutination with all three types of red blood-cells. These fluids were then diluted in broth and inoculated into the allantoic cavity of 10-11 day eggs. The fluids harvested after 2 days' incubation at 37°C were of low titre. Further passage yielded fluids giving a titre of 1 : 160 or 1 : 320. After 3 or 4 allantoic passages it was noted that 50% or more of the inoculated eggs were dead before harvesting. The embryos were invariably covered with petechial haemorrhages, and congestion of the cerebral sinuses were frequently seen. Bacteriological controls of the egg contents were sterile.

Tissue Culture. Slight cytopathogenic changes were observed in the two cultures 10029 and 12601 on the 3rd day of incubation. These consisted of a scattering of small rounded cells distributed throughout the cell sheet. The changes were not progressive and no more than one-quarter of the tissue was involved by the 6th day of incubation, when

TABLE II

Haemagglutination-Inhibition Titres with 4 Agglutinating Doses of

	10029	12601	A/Sing. /1/57	A/Ned. /36/56	B/Aus. /43
Serum 10029					
Acute phase	0	0	0	192	384
Convalescent phase	576	96	1,536	192	384
Serum 12601					
Acute phase	0	0	0	0	0
Convalescent phase	384	192	768	48	192
Serum 2036					
Acute phase	0	0	0	0	384
Convalescent phase	1,536	0	1,152	0	384
Serum 12584					
Acute phase	0	0	0	0	0
Convalescent phase	96	0	768	0	0
Serum 13058					
Acute phase	0	0	0	0	0
Convalescent phase	384	24	1,536	6	96
Serum 11048					
Acute phase	0	0	0	0	0
Convalescent phase	0	0	0	0	0
Normal ferret serum	0	0	0	0	0
A/Sing./1/57 ferret antiserum	768	192	3,072	0	0
A/Nederlands/36/56 antiserum	0	0	0	768	0
B/Australia/43 antiserum	0	0	0	0	384

the cultures were discarded. Media were changed on the 3rd or 4th day of inoculation and the fluids tested for haemagglutination with human group-O red blood-cells, guinea-pig red blood-cells, and fowl red blood-cells. Haemagglutination was demonstrated at 4°C in the culture fluids from the two gargles which later yielded virus in egg culture.

Antigenic Analysis. Table II shows the results of the H.A.I. tests used for typing the strains, and for titration of the acute-phase and convalescent-phase sera. As will be seen, case 1 (Coy. no. 11048) was the only one in which a rise in antibody titre to the strain A/Singapore/1/57 was not demonstrated. All other sera showed a marked antibody titre in the convalescent phase although virus was isolated only from the two cases from which gargles had been obtained on the first day of illness.

Mouse Inoculations: (1) *Pathogenicity.* The strains were not pathogenic for mice when inoculated by the intranasal route. Minimal lesions only were induced on serial passage.

(2) *Toxicity.* There was no indication that the strains were toxic for mice when inoculated by the intracerebral, intravenous or intraperitoneal routes.

SUMMARY

An epidemic of influenza amongst the African labourers in a group of gold mines is described.

Laboratory investigations have shown the strain responsible to be identical with those isolated in the Far East, of which the prototype strain is A/Singapore/1/57.

Preliminary studies of the biological properties of the virus in tissue culture and mice are described.

Our thanks are due to Dr. Clifton, Group Medical Officer, New Consolidated Goldfields, for permission to carry out this study and to publish our findings, and to Dr. J. H. S. Gear for criticism and help in writing this paper.

APPENDIX

Since this paper was submitted for publication evidence has been obtained which suggests that the Asian strain of influenza is still present amongst the African workers on the mines. From 14 November 1957 a steady increase of daily admissions of patients with mild respiratory diseases was noted. From an admission rate of one or two per day the number steadily increased until a peak was reached on 23 November, when 12 patients were admitted. The numbers then declined slowly until 4 December, after which the admission rate was again one or two per day. Serological studies of acute- and convalescent-phase sera from patients on the Simmer & Jack Mine, admitted between 18 and 28 November, showed that many of these patients had antibodies to Asian influenza in the convalescent-phase sera while the acute-phase sera were negative. The greatest percentage of positive results were found amongst new recruits who had been resident on the mine for a period of 2 months or less.

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NASOPHARYNGEAL FIBROMA*

D. J. ROUX

Ear, Nose and Throat Department, Groote Schuur Hospital, Cape Town, and University of Cape Town

Nasopharyngeal fibroma is a comparatively rare type of vascular benign tumour occuring in both sexes, but more frequently in young males during puberty. These tumours tend to regress during the ages of 25-30. The management of 3 cases diagnosed as nasopharyngeal fibromas during the last 4 months at the Groote Schuur Hospital forms the basis of this paper, and will be described; 2 cases turned out to be genuine nasopharyngeal fibromas and the 3rd case was found to be a huge cyst and was only diagnosed at operation.

Although we have seen 2 cases in quick succession recently, this condition is not very prevalent in South Africa as compared with the Americas and Mexico, according to Acuna[1] of Mexico, who states that they see an average of 12 cases a year. On the other hand Martin,[2] of the Hull Royal Infirmary, writing in 1954, states that only 6 cases had been traced in the literature since 1930. Handousa, Farid and Elwi,[3] in going through the records, found only 1 case of nasopharyngeal fibroma amongst approximately 50,000 patients examined in Egypt, whereas Allen observed the tumour in about 1 in 16,000 E.N.T. patients in New York.

The aetiology of the tumour is unknown. It seems to be generally accepted that its origin is in the periosteum or perichondrium of the basi-occipit or basisphenoid, the ethmoids or vomer, or any other situation in the neighbourhood of the nasopharynx. This, according to Morrison,[4] is probably the result of irregular development of the skull base during puberty, whereby the periosteum hypertrophies abnormally. Ossification of the basisphenoid and basi-occipit takes place in about the 25th year in males and earlier in females.

Pathology. The tumour is essentially a dense hard fibrous tissue, covered with nasopharyngeal mucosa of stratified columnar epithelium, with numerous blood channels running through it, often resembling cavernous tissue. Sometimes one finds cell nests of undifferentiated connective-tissue cells. Areas of necrosis may be seen and leucocytic infiltration in the presence of infection. The tumour may grow for a number of years and suddenly undergo degeneration and retrogression and disappear. There is no conclusive evidence that malignant changes ever occur in these cases.

Symptoms. Nasal obstruction is present in all cases, with resultant nasal speech. The patient may complain of repeated attacks of severe haemorrhage from the nose or nasopharynx. Also a purulent nasal discharge may be seen, with symptoms of eustachian obstruction, deafness, tinnitus and signs of middle-ear involvement. Lateral spread of the tumour into the maxillary antrum and ethmoids will cause facial deformity. If growth extends into the nose the septum will be pushed over to one side or the other and the growth may even present at the anterior nares. Upward extension of the tumour into

*A paper presented at the South African Medical Congress, Durban, September 1957

the base of the skull or the sphenoid region may cause pain from pressure on the fifth nerve and even blindness from optic atrophy. There may also be downward pressure into the nasopharynx, with dysphagia. The patient is usually very pale from loss of blood and secondary anaemia. The growth may invade the dura and destroy the sella turcica; secondary infection may lead to meningitis and fatal complications.

Differential Diagnosis

The diagnosis of a nasopharyngeal tumour should not be very difficult, but a biopsy should always be made as well as the clinical examination, so as to make quite sure what type of growth one is dealing with. Some authors do not favour a biopsy on account of haemorrhage and the possible formation of adhesions, which may render a subsequent operation more difficult. To my mind, the advantage of knowing what type of tissue one is dealing with far outweighs the possible risk of haemorrhage and adhesions.

One should suspect any firm tumour partly or completely filling the nasopharynx of a young person as a fibroma. It exerts enormous pressure with the finger-like processes it sends out, pushing the structures in its neighbourhood and causing atrophy and ulcerations. There is no involvement of the upper deep cervical glands as in malignancy. The tissues of the nasopharynx at the attachment, show no sign of infiltration on inspection with a post-nasal mirror or on palpation.

Choanal polyps should not be mistaken for this tumour if one remembers that they usually have a long stalk and are pale and whitish with a soft consistency like adenoids. Other tumours, such as sarcomas, carcinomas and mucus-gland tumours and teratomas, occur in the nasopharynx, and a biopsy usually clears up the diagnosis. A huge dermoid cyst, the third case in our series, was mistaken for a nasopharyngeal fibroma (see below).

Radiological appearances give a soft uniform shadow in the nasopharynx and also show extensions into the nose, sinuses and base of skull.

TREATMENT

Nasopharyngeal fibromas have been treated differently by various schools. Hayes Martin *et al.*[5] described the sex-hormone therapy, which is still in the experimental stage. They hold that spontaneous regression occurs at the time of sexual maturity and that the tumour can be controlled by moderate irradiation and limited surgery.

Radiotherapy has been widely used for nasopharyngeal fibroma, including the use of radium needles and the implantation of radon seeds and deep X-ray therapy. It is stated that irradiation reduces the vascularity of the tumour and diminishes its size. It is a good substitute for cases which refuse or are unfit for surgical intervention.

Electrocoagulation. Figi[6] suggests the use of electrocoagulation for the destruction of the tumour, working through the hard palate and nasopharynx and performing the operation in several stages. He prefers this to surgical removal.

Surgical excision seems to be the only ideal method of cure. When the tumour is still small simple removal can be done with a cold wire snare in the nasopharynx. In the presence of a large tumour with infiltrating finger-like processes and destruction of neighbouring regions, the condition becomes much more dangerous. In this type of case an extended Denker operation or a Moure's lateral rhinotomy will suffice. If a satisfactory exposure, which is essential, cannot be obtained by this route, the palate may be split vertically, or a transpalatal approach may be made. Alternatively a combination of the oral route with an external approach, as preferred by Handousa *et al.* can be used.

In our 2 cases, the first tumour was removed externally by the lateral rhinotomy incision and the second one was dealt with adequately by the transpalatal route. The growth is grasped in heavy forceps and held firmly. A curved periosteum elevator and the finger are used, with gauze dissection, to try and separate the growth from the underlying bone. As soon as the whole growth with the finger processes is set free it is removed and the bed is packed with a strip of vaseline gauze. For fear of excessive bleeding, care should be taken not to tear through the tumour mass before the whole growth is delivered.

The operation is performed under general anaesthesia and the patient should be intubated and the pharynx packed off to prevent blood entering the trachea. Tracheotomy is not necessary in these cases. During the operation a blood transfusion is given as a routine measure to make up for blood lost. Antibiotics should be given for 5-7 days after the operation. The nasal septum should be corrected a few months after the operation. A Boyle-Davis gag is used to keep the mouth open if necessary and to keep the tongue out of the way. Diathermy is used for haemostasis.

CASE REPORTS

Case 1

L.T. a male Native aged 16, was first seen in the E.N.T. outpatients on 31 January 1957, with a 2 years' history of left nasal obstruction at first and afterwards complete nasal obstruction. There had been frequent epistaxis during the last few months. He also complained of dimness of vision in the right eye.

Examination. He was poorly developed, with a broad nasal bridge but no frog face. Nothing abnormal was found on examination. B.P. 100/70 mm. Hg. The nose showed the septum badly deviated to the right, with the left nasal fossa filled with a firm smooth mass. This could also be seen in the post-nasal space as a smooth round mid-line mass filling the nasopharynx and pushing the soft palate downwards. The ophthalmologist examined him and reported an early optic atrophy of the right eye with defective vision, counting fingers at 2 feet. The left eye was normal as were the peripheral visual fields.

X-ray of the skull showed a mass in the nasopharynx and left nasal cavity displacing the septum and the left ethmoids. The sphenoid sinus was eroded and the pituitary fossa was displaced upwards and the clinoid processes spread apart.

A biopsy was taken, after which severe bleeding took place, which was controlled by a bipp pack. The pathological report confirmed the diagnosis of a juvenile nasopharyngeal fibroma.

The patient was treated for 1 week before the operation with tonics, vitamins and blood transfusions to raise his resistance.

At operation the patient was anesthetized and a cuffed endotracheal tube was inserted, with a throat pack. Two blood drips were erected and held in readiness for the expected haemorrhage. The tumour was exposed by a left lateral rhinotomy incision and the medial wall of the antrum, the frontal process of the maxilla and the left nasal bone were removed to improve the exposure. The tumour was freed by blunt dissection. An uneventful recovery followed. The septum was corrected and displaced to the left 4 weeks after the operation.

Comment. This patient lost quite a lot of blood at the operation and was given 3 pints of blood during the procedure.

Case 2

J.C., a male European aged 28, was admitted on 27 March 1957, complaining of left nasal obstruction for about 3 years with severe intermittent bouts of massive epistaxis on occasions

as much as one pint. A respite of a few months had been followed by recurrence of symptoms. For 6 or 9 months he had suffered frontal headaches with left earache, tinnitus and deafness. Part of the growth in the nasopharynx was removed in August 1956 by the cold snare and evulsion method.

On examination of the anterior nares a polypoidal mass could be seen occluding the left nasal cavity posteriorly and partially occluding the right side. A small, round-looking polyp was seen under the right middle turbinate. In the nasopharynx a mass was observed occluding the posterior nares, more marked on the left and obscuring the left eustachian cushion. The left eardrum was indrawn. The right ear was normal. On perimetry the visual fields appeared normal.

X-ray Report (27 March): (1) There is veiling of the left ethmoid cells. (2) Sphenoid sinuses are large and floors are intact. The anterior aspects of each sphenoidal sinus are veiled. There is well defined soft-tissue swelling in the nasopharynx which occludes the normal air space. *Conclusion:* There is encroachment of the left nasopharyngeal air space and the right nasal cavity by a soft-tissue tumour.

Operation. On 28 March the patient was operated on through the transpalatine approach to the nasopharynx. The posterior edge of the hard palate was identified and a cresentic transverse incision was made just above the junction of attachment of the soft palate down to the bone. The soft palate was freed from the posterior edge of the palate and the excision extended along the pterygo-mandibular raphe. No bone was removed from the hard palate. The fibroma was found attached to the root and left wall of the nasopharynx over the eustachian cushion. The tumour was freed by blunt dissection and avulsed with Moynihan's forceps. A small portion was removed anteriorly through the right nasal cavity after a right inferior turbinectomy. Paraffin mesh gauze was inserted and the palate closed in layers with catgut. Recovery was uneventful.

Comment. The reason why the retropalatine approach was used was that the tumour was located mainly in the nasopharynx.

Case 3

A.G., a 15-year-old European girl, was sent from the country complaining of a blocked nose for 18 months with frontal headaches and a purulent serosanguineous discharge from the right nostril. No deafness.

On examination a large firm reddish mass was seen in the left nasal cavity, pushing the septum over to the right and completely obstructing the right nasal cavity. In the post-nasal space there was a firm reddish mass filling the nasopharynx, especially on the right side. The eustachian tubes and the posterior choanae were not seen. On palpation of the post-nasal space a hard resistant growth was felt.

X-ray Report (2 April 1957): A large mass is seen in the left nasal cavity. This is responsible for displacement of the septum to the opposite side. The mass extends across the mid-line to fill the medial half of the right side. The basal view shows a large destructive mass filling the nasopharynx. In addition, there is evidence that there is extension of the process to involve the floor of the sella.

Operation. On 10 April a Moure's left rhinotomy was performed. The left nasal bone and the frontal process of the maxilla were partly nibbled away, and the mass was exposed in the left nasal cavity. During the attempt to mobilize this mass and determine its attachment, the mass suddenly ruptured, discharging yellow thick homogeneous fluid presenting all the features of pus. The cyst was found to be attached to the septum, which was defective posteriorly in the vomerine region, and it was removed completely. The mucosa and soft tissue of the lateral wall was closed with interrupted catgut sutures and the skin with fine dermalon. Two pints of blood was administered during and after the operation. A portion of the cyst wall was taken for histological examination and showed oedematous and vascular connective-tissue stroma, hyperplasia of the mucous glands, and infiltration with plasma cells, polymorphs and lymphocytes. The fluid showed protein content with no organisms.

Comment. Uneventful recovery. This case could very easily have been mistaken for a nasopharyngeal fibroma which would not have occurred had a proper biopsy been taken before operation.

DISCUSSION AND SUMMARY

The management of 3 recent cases diagnosed as nasopharyngeal fibromas forms the basis of this paper. Nasopharyngeal fibroma is a comparatively rare type of vascular benign tumour occuring most frequently in young males. The condition is not very prevalent in South Africa; in the Americas and Mexico it is more prevalent.

Although the aetiology is unknown it seems to be generally accepted that the origin of the tumour is from the basi-occiput or neighbourhood, probably as a result of irregular development of the skull during puberty, for ossification of the basi-occiput takes place about the 25th year.

It is a hard fibrous-tissue tumour interlaced with numerous blood channels, which is essentially benign, with locally invasive characteristics and may undergo involution and completely disappear.

The condition is manifested by recurrent severe epistaxes, nasal discharge, and nasal and eustachian obstruction with deafness and otitis media.

This tumour has to be differentiated from malignant disease of the post-nasal space, where regional glands are early involved, and choanal polypi, where there is a stalk and the tumour consistency is soft like adenoidal hypertrophy. Dermoid cysts also occur in this region but, like sarcomata, are well demarcated, without finger-like elongations extending into neighbouring tissues.

There are various schools of thought on treatment:

1. Hayes Martin's sex-hormone therapy, still in the experimental stage with hormonal therapy combined with limited surgery and moderate irradiation.

2. Deep therapy. It has been claimed that irradiation reduces the size and vascularity of the tumour. This is a good substitute in cases who refuse or are unfit for operation.

3. Figi advocates electrocoagulation for destruction of the tumour, destroying the tumour in several subsequent stages.

4. Surgical excision we regard as the best method for complete eradication of the tumour. Where the tumour is extensive, with large prolongations extending into surrounding tissues, a Moure's lateral rhinotomy or a transpalatal approach is indicated. Operation under general anaesthesia with intratracheal intubation and administration of blood during operation seems to us to be essential, but tracheotomy is not necessary. Two recent cases have been described in detail, as well as a third case which was diagnosed as a fibroma, but which at operation turned out to be a dermoid cyst.

Some surgeons refrain from making a biopsy in suspected cases of nasopharyngeal fibromas because of the possibility of severe haemorrhage or subsequent adhesions. We feel strongly, however, that a biopsy is essential to determine the nature of the tumour so that adequate planned treatment can be instituted to suit the needs of the individual case.

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THE SOUTH AFRICAN REHABILITATION COUNCIL *

W. H. ALKEMA, M.B., B.CH. (RAND)

Medical Superintendent, Boksburg-Benoni Hospital, Boksburg

This paper is mainly confined to a factual statement of the formation, composition, functions and objects of the South African Rehabilitation Council. No attempt is made to go into minute details of the work.

The South African Rehabilitation Council,as its name signifies, has as its main object the rehabilitation of those unfortunate individuals who are handicapped physically, mentally or psychologically. One is often inclined to think of disablement in terms of a physical defect or injury. However, there are mental handicaps which may be less obvious but at the same time are no less real. The problems of alcoholism, mental retardation, disturbances of neurological and psychological functioning, leave scars on the individual which may be just as disabling or paralysing as any physical handicap. The absorption and reabsorption of these individuals requires the same approach basically as of the physically handicapped, viz. rehabilitation, which includes selective placement in employment.

This country cannot afford to continue without rehabilitation services. According to a survey of man-power in the skilled trades, there was a shortage of 11,218 artisans on 18 May 1956, which represents 7% on the establishment for this group, and 4,732 apprentices, which represents 11·5%. Because a shortage of skilled man-power is in existence throughout the Western world, we cannot rely on other countries to supplement our shortages. Under these circumstances we should concentrate on developing our own resources and, just as in the last 2 decades great progress has been made in the development of natural resourses so we trust that in the decade now beginning, the development of human resources may be able to scale the same peaks.

Rehabilitation in South Africa is a part of the effort to encourage and conduct the development of man-power resources, with the aid of medical treatment, psychological adjustment, counselling and selective placing. Rehabilitation is not aimed at enlisting public sympathy but to find clear understanding of the problems of the handicap—above all to show that the handicapped person is able to do a job of work, that his accident risk is low, his absenteeism nil and his productivity high, and that he has the right to live and is willing to work hard for his living.

HANDICAPPED PERSONS: DEFINITION AND CLASSIFICATION

A handicapped person is one who, in consequence of physical or mental disability or weakness in varying degrees, or of environmental circumstances, or of a combination of these factors, is likely to find it difficult or even impossible to adjust himself in the community, more particularly in obtaining or retaining employment, unless he obtains assistance of some kind from the State or from voluntary agencies. Such assistance may take the form of medical or mental treatment; a course in rehabilitation training; vocational counselling, training or placement; follow-up or after-care; personal social services; and, in terminal cases, counselling or institutional care, whether or not accompanied by a State pension or grant. Handicapped persons may be classified as follows:

1. *The Physically Handicapped*

(*a*) Cripples, including cardiacs and cerebral palsied.
(*b*) The blind and partially sighted.
(*c*) The deaf and the hard of hearing.
(*d*) Epileptics. (*e*) Tuberculotics. (*f*) Miscellaneous.

2. *The Mentally Handicapped*

(*a*) The sub-normal.
(*b*) High-grade and re-adjustable mental defectives.
(*c*) The emotionally unstable—problem cases.
(*d*) Mental disordered cases, after treatment and release (on licence) or discharge.

3. *The Physically and Mentally Handicapped*

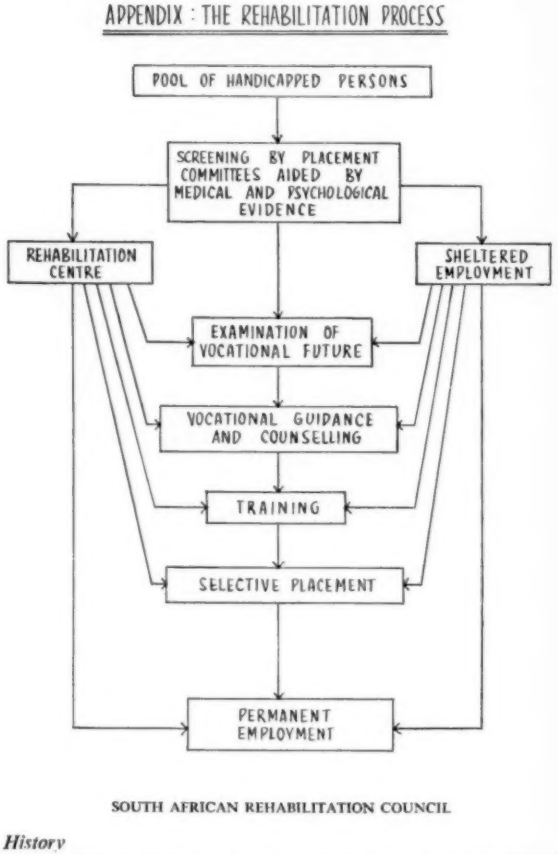
(*a*) Alcoholics and drug addicts.
(*b*) The aged.
(*c*) Inmates of Work Colonies and released or discharged prisoners.

In assessing the handicapped work-seeker, the following investigations must be made:

(i) Determine what type of work he has already performed.
(ii) Ascertain what his hobbies and interests are.
(iii) Ascertain his educational qualifications as well as any job training that he may have had. Especially in cases where he has to change his employment or has not worked before, determine his aptitudes and specific skills.
(iv) Find out, irrespective of his disablement, what positive characteristics he shows, e.g. willingness, diligence, stability and perseverance.
(v) Determine how his positive qualities can be used for any type of work in which his disablement does not disqualify him.

The Rehabilitation process is diagramatically shown in the Appendix.

APPENDIX : THE REHABILITATION PROCESS



SOUTH AFRICAN REHABILITATION COUNCIL

History

In February 1952 a national conference was held by special instruction from the late Minister of Health and of Social Welfare, Dr. K. Bremer, to study the handicapped in South Africa. Various authorities and interested persons spoke and deliberations followed.

*A paper presented at the South African Medical Congress, Durban, September 1957.

The principal aim of the conference was to discuss the subject 'Holism in Rehabilitation' and to formulate a policy. The result of the conference was placed before both Houses of Parliament on 2 June 1952.

The conference decided to appoint a pilot committee with a view to establishing at a later date a national body to promote and coordinate rehabilitation. This committee met again during 1952 and made certain recommendations to the Minister, of which the main one was the formation of the South African Rehabilitation Council.

In the meantime the functions of rehabilitation were transferred to the Department of Labour from the Department of Social Welfare. The present Minister of Labour, Dr. J. de Klerk then established the Rehabilitation Council in 1955 under the Chairmanship of Mr. J. F. Hannah, Secretary of Labour.

Membership

The minister sought advice from all national councils dealing with handicapped persons, the Medical Association of South Africa, Provincial Administrations and Government departments, and the following people were selected as members of the Council, either private members (or alternates) or *ex officio* members (or alternates).

Private Members: Dr. W. H. Alkema, Mr. S. I. Basson, Dr. M. J. Broderick, Mr. J. M. Burger, Mr. G. T. du Toit, Dr. G. K. Engelbrecht, Mr. N. S. Erasmus, Mr. P. K. Hoogendyk, Mr. D. N. Murray, Dr. (Mrs.) N. Roux, Mr. J. C. Rutherford and Dr. L. M. A. N. v. Schalkwyk. *Alternate Members.* Mr. G. H. Beetge, Mr. H. S. Jooste, Dr. J. H. Luckhoff, Dr. H. Moross, Mr. J. C. Pieterse, Dr. J. W. Scott-Millar.

Ex-Officio Members (Alternates in brackets). Department of Labour, Mr. J. F. Hannah, Chairman of Council (Mr. J. M. F. Potgieter, Vice-Chairman of Council).

Department of Health. Dr. B. M. Clark (Dr. H. F. Schiller).

Department of Social Welfare. Dr. J. A. Grobler (Mr. A. E. Anderson). *Department of Education, Arts and Science.* Dr. C. M. van Antwerp (Mr. G. F. Starker). *Provincial Administrations.* Dr. H. J. Hugo (Dr. R. L. Retief), Dr. D. A van Binnendyk (Mr. D. W. Scallan), Mr. J. M. Rothman (Mr. H. J. Neethling) and Mr. H. A. Coetzee (Mr. H. H. Hall). *Department of Prisons.* Lt. Col. S. L. J. Jacobs (Captain C. J. Brink).

The Department of Labour acts as the Secretariat and also supplies persons with expert knowledge of the handicapped and of labour facilities.

FUNCTIONS OF COUNCIL, AIMS AND OBJECTS, ETC.

In his opening address on 29 July 1955 in Pretoria, the Minister of Labour stressed the importance of team-work in the rehabilitation problem. The Council met again in August 1956 and accepted as a working basis the recommendation made by the Pilot Committee of 1952. It was agreed that its functions should be extended and that the undermentioned 6 objects were the most important:

1. To formulate a uniform national policy.
2. To advise the Minister with regard to the usefulness of certain rehabilitation services.
3. To take the leading part in the creation of rehabilitation services in which more than one national body or Government department is concerned.
4. To spread information and make propaganda for rehabilitation.
5. To consider all aspects of professional advice, re-education and after-care in sheltered employment with the view of placement into the ordinary labour market.
6. To strive to bring about such legislation as will benefit handicapped persons and to achieve better coordination with regard to existing legislation.

The function of the Council is largely advisory in nature, one of its major tasks being a consideration of the best means towards coordination of rehabilitation services in the Union. The recommendation of the continuation committee of the National Conference was that the functions of the South African Rehabilitation Council should include the following:

To lay down a uniform national policy of rehabilitation.

To give advice to the Minister on the relative usefulness of certain rehabilitation services.

To coordinate existing rehabilitation services more effectively.

To eliminate duplication of services.

To serve as an incentive towards obtaining and expediting necessary rehabilitation services.

To take the lead in the creation of certain rehabilitation services in which more than one national body or Government department may be concerned.

To spread publicity and propaganda on rehabilitation matters.

To concern itself with the problems of handicap caused through blindness, epilepsy, tuberculosis, crippling disease and the like and to see that these problems are attacked in a practical and realistic manner.

To encourage the universities to arrange vacation courses in rehabilitation.

To endeavour to make study and travel scholarships available to approved persons to enable them to study rehabilitation matters in overseas countries in particular.

To endeavour to provide measures for the closing of the hiatus which exists between hospital treatment and re-employment and so reduce wastage of man-power.

To attempt to obtain cooperation of local authorities, commerce, industry and organized labour in re-adjustment, training and employment of handicapped persons.

To take action in the protection of the identity and sphere of action of national bodies.

To work out the retraining programme for people in prisons, work colonies and work corps.

To take steps towards the prevention of disablement.

To initiate investigations into the causes of handicap.

To give consideration to all aspects of vocational guidance and re-training aimed at employment in both the open labour market and in sheltered employment and to encourage after-care services.

To endeavour to bring about legislation for the handicapped.

To give attention to any other matters in connection with the rehabilitation of handicapped persons which may be brought to its notice from time to time.

Although the fundamental attribute of a handicapped person may be a well-defined physical or mental condition which is diagnosed in a straightforward manner, the handicapping condition may include many facts which are psychological and social in their implication. All of these have to receive the attention that is necessary in order to bring the handicapped person back into line with his fellows. Modern concepts of the use of prosthetic appliances for cosmetic as well as utilitarian ends, and the introduction of plastic surgery to restore the physical stature and appearance to normal, are helping to make the reinstatement of the handicapped as a full member in the community an easier achievement than it was in the past.

Again the significance of the rehabilitation of the handicapped today arises out of a very large number of factors, medical, psychological, social, economic and spiritual.

WHAT THE COUNCIL HAS ALREADY ACHIEVED

Firstly the Council has appointed standing sub-committees to deal with its 6 main objects. The 2 chief sub-committees, that of Placement of the Handicapped and that of Propaganda, have made great strides and have accomplished the following work:

1. *Placing of handicapped into suitable employment*

Cripples have been trained in sheltered-employment factories and reabsorbed into the labour market. Some of the blind have been placed into positions for which they are suited, e.g. as telephonists, etc. Alcoholics have been placed after receiving treatment; some of these have also passed through the sheltered employment centres.

One of the main achievements has been to induce employers to keep pensioners in their jobs for a longer period. This led to a raised pensionable age limit, from 60 years to 63 or even 65; and to re-employ older persons for an extra few years.

2. *Sheltered Employment*

The sheltered employment factories have all been taken over by the State, a policy which has the following advantages:

(*a*) The Government, in administering the scheme itself, will be in a better position to control State funds voted for the purpose of the scheme.

(*b*) As it is intended to change the purpose of the scheme so that short-term rehabilitative cases that are capable of being re-absorbed into the open labour market after training in sheltered

employment shall be catered for, more attention could be given by the Department of Labour to rehabilitation along these lines.

(*c*) The selective placement of employees in the open labour market by placement officers and vocational guidance officers will be facilitated.

(*d*) This will help the Department towards easing the shortage of man-power.

(*e*) Economy will be effected by the use of the machinery of the Union Tender Board in acquiring supplies of materials.

(*f*) Staff members will become State employees and thus will be assured of a greater security of office.

(*g*) The cost of employing commercial auditors will be saved. Books and accounts will be subject to examination by Government Auditors and Departmental Accounting Officials.

At first the Government partially subsidized the sheltered-employment factories, and eventually subsidized them fully. It then became apparent that the Government ought to take them over completely. There are certain disadvantages in the loss of the present system of control by voluntary organisations which has stimulated public interest in the sheltered-employment scheme and the rehabilitation of the handicapped generally, but these disadvantages are outweighed by the abovementioned advantages.

Two more industrial rehabilitation centres, one in Johannesburg and the other in Cape Town, have been recommended by the Council to the Minister of Labour and will come into operation shortly. Changes and expansion are envisaged to the existing centres.

3. *Propaganda*

Extensive propaganda has been worked out; indeed, some of the abovementioned achievements have been accomplished by propaganda methods. Letters, pamphlets, circulars and leaflets have been sent to all employers urging them to acquaint themselves with the Rehabilitation Council and its functions. Further propaganda efforts have included the following:

(*a*) A 3-*monthly journal* (*Rehabilitation in South Africa*) is being published as the organ of the South African Rehabilitation Council. The first edition came out in March 1957 and was widely circulated free of charge. Subscribers were invited to apply for free copies of this Journal. It will carry no advertisements. Its articles which will be written by experts on various subjects and will refer to rehabilitative services in the Union, can be copied by other journals sympathetic to the aims and objects of the Council; there will be no copyright reserved. Many journals circulating in the Union have welcomed this effort and are willing to publish articles on Rehabilitation.

(*b*) *Rehabilitation Directory*. It is hoped that the Directory will appear during the latter part of 1957. The contents will include a definition and classification of the physically and mentally handicapped and lists of the following:

(i) Organizations and institutions providing treatment, training, rehabilitation, employment, after-care or personal social services.

(ii) Homes, schools and training institutions which provide vocational training to handicapped children and adolescents.

(iii) General hospitals making provision for rehabilitation services by the employment of hospital social workers.

(iv) National voluntary organizations, with their affiliates or branches, providing services of various kinds to the handicapped, with a brief statement of the nature of the work done, including statistics of inmates.

(v) Government authorities providing treatment, training, rehabilitation or employment of the handicapped, with nature of service.

(vi) Homes which specifically provide accommodation for handicapped persons.

(*c*) *Other Propaganda Methods*. These have included pamphlets, placards, press releases, radio talks in various forms, exhibits at exhibitions, advertising in cinemas; and also the following measures of *special publicity*:

(i) Direct communication with large employers of labour including Government departments and the Provincial and S.A.R. & H. administrations.

(ii) Addresses and talks by Labour Department officials and others to national councils, Rotary clubs, Church gatherings, etc.

(iii) Documentary films available from overseas and Union libraries.

(*d*) *A Propaganda Campaign* based on a national and local basis. Different methods have still to be worked out in consultation with national and local organizations. A 'Rehabilitation Week' for the whole Union is envisaged.

STATISTICS OF HANDICAPPED PERSONS

The numbers of European handicapped persons in the Union of South Africa are as follows:

War veteran pensioners (mostly over 60 years)	31,000
Old age pensioners (over 65 years)	86,000
Alcoholics	90,000
Blind	2,400
Mental cases:	
Feeble minded and mentally retarded school-going children	30,000
Patients in mental hospitals	9,560
Persons receiving pensions for physical disablement	10,000
Deaf and dumb	2,500
Tuberculous persons	1,500
Epileptics	1,100
Unemployed	7,000
Total	271,060

Non-Europeans. There are many hundreds of thousands of non-European handicapped persons in South Africa and they present the same problems as the European handicapped, the solution of which is of similar importance from the social and industrial point of view. The Council is not overlooking this side of the problem and is trying to do all in its power to assist in its solution. The volume of the handicapped population is far greater amongst South African non-Europeans than amongst the Europeans. The blind non-European handicapped, for instance, number 26,000 and the tuberculous non-European handicapped 100,000; these groups are receiving attention from public authorities and voluntary agencies. There are also 10,000 non-European patients in the mental hospitals.

CONCLUSION

The most important effort of the Rehabilitation Council is to make the people of South Africa conscious of the fact that it is good business to employ physically handicapped persons. 'It pays to hire the handicapped' is the propaganda slogan of the Council. The Council wishes to emphasize to all the world the great value which we in South Africa place upon the dignity and work of each individual human being.

Legislation. A Draft Bill (the Handicapped Persons Rehabilitation Bill) has been prepared for submission to Parliament in 1958.

MEDICO-LEGAL EVIDENCE IN WORKMEN'S COMPENSATION CASES

Abstract of Article by*

EARL D. MCBRIDE, M.D.
Oklahoma City, Oklahoma

The right to a difference of opinion has its influence in medico-legal testimony as well as in other situations. The causal relationship of constitutional disorders to injury is probably the most difficult situation which comes before the Industrial Court and the author in a paper presented at the 1956 Convention of the International Association of Industrial Boards and Commissions limits his

* From *Compensation Medicine* (1956): 8, 12. Published at the request of the Workmen's Compensation Commissioner, Pretoria.

discussion to this phase of disability evaluation covering the following subjects:

I. *Pre-existing physical impairment and its influence on disability allegedly due to trauma*

To secure all the facts concerning a pre-existing condition is not easy, and the claimant may be unaware of the pre-existing condition, e.g. spondylolisthesis, chronic degenerative arthritic changes, etc., which may only be discovered on X-ray. The doctor's opinion will be affected by his knowledge and experience and he must determine the following questions: (*a*) Is the injury the direct cause of the condition? (*b*) Did the injury aggravate the existing condition, and if so (*c*) when will such aggravation cease to exist? (*d*) Would the natural progress of the existing condition eventually produce the disability found on examination, and if so (*e*) to what extent did the injury hasten the onset of the disability? (*f*) What would the disability be without the disease?

II. *Psychogenic manifestations which create exaggeration that masks the true extent of the disability*

Although malingering is rare, exaggeration is common. To distinguish and evaluate the psychogenic overlay the doctor must decide the following questions: (*a*) To what extent does the psychogenic overlay actually enter into the disability? (*b*) Could the claimant work if he was willing to try hard enough? (*c*) Will the neurotic symptoms disappear on settlement or return to work?

III. *Differential diagnosis in the causal relation of injury to disease*

Great difficulty may be experienced in accurately defining the responsibility of an alleged injury where the results may be partially or wholly those of intrinsic non-compensable disease processes. It is therefore, necessary to verify the trustworthiness of the history and, even though there may be absence of substantiating clinical evidence, subjective complaints should be given consideration. Confusion must be avoided by carefully evaluating the established pattern of disease or injury from the irregular allegations motivated by the desire for reward.

Injury may be related to disease in 3 different types of circumstances, viz: (1) Injury as a direct cause of disease, (2) injury as an aggravating factor in the pre-existing disease, and (3) injury in addition to some unrelated systemic disease.

Injury can be regarded as the cause of a disease state only when it is scientifically conclusive that the injury primarily influenced, brought into activity and created the existence of the pathology of the disability. Certain rigid limits exist within which certain diseases are to be adjudged the result of trauma. They involve the following: (*a*) The scientific recognition of trauma as the cause of the disease. (*b*) The physical state of the individual before injury, the type and the mode of onset. (*c*) The lapse of time between trauma and the onset of disease; its immediate effects; objective and subjective manifestations. (*d*) The absence of causes of the disease other than trauma. (*e*) The severity of the injury as related to the disease. (*f*) Disease as cause of the accident.

IV. *Consideration of the disease as the cause of the accident*

Certain recognized disease states, e.g. tabes dorsalis, epilepsy, hemiplegia, may cause clumsiness resulting in accidents, while an unrecognized condition such as a brain tumour might interfere with eyesight enough to cause an accident although it is not severe enough for the individual to be aware of its existence.

V. *Injury as an added disability to some unrelated disease condition*

In the presence of concomitant chronic systemic disease (high blood pressure, diabetes, arteriosclerosis etc.) an injury may heal and in no way be involved in the chronic systemic disease. On the contrary, the gradual inroads of such disease may have made recognized progress to the extent that it is now causing disability although the disability started with an injury. The time must therefore be recognized when the injury ceased to exist and the disability continued to exist as a result of the chronic systemic disease. For example, a person may develop a coronary thrombosis while any injury is healing. He would recover from the injury but would probably be disabled from the coronary thrombosis, which was in no manner connected with the injury and would have occurred whether or not he had sustained an injury.

Disability Evaluation

Where medical complications of a disability involve the causal relation of disease to injury there must be an apportionment of the compensable and non-compensable components. Three steps are necessary, viz.: (1) Determine the percent of permanent disability regardless of responsible sources; (2) determine the percent of disability that would have resulted from non-compensable sources had no compensable injury occurred; (3) estimate the percent of disability attributable to compensable sources alone. The question often must be answered: When would the natural progress of the disease process catch up with the disability which has been hastened through aggravation from injury? The period of aggravation is usually that of a temporary disability. If the injury has added to the permanent disability of the disease condition it should be so evaluated.

M.G.

HISTORY OF MEDICINE IN SOUTH AFRICA

DEUR DR. E. H. BURROWS

Uitgegee deur A. A. Balkema

Die uitgewers wil graag bekend maak dat die publikasie van hierdie boek vertraag is as gevolg van omstandighede waaroor hulle geen beheer het nie. Die boek sal gevolglik eers teen April van hierdie jaar verskyn.

Die boek word uitgegee onder die beskerming van die Mediese Vereniging van Suid-Afrika, en in ooreenstemming met die Vereniging is 'n prospektus uitgestuur aan alle lede wat gevra was om op 'n antwoordstrokie aan te stip as hulle nie die boek wil ontvang nie of as hulle ekstra eksemplare wil koop teen die spesiale prys vir lede van die Vereniging. Hulle is terselfdertyd in kennis gestel dat elke lid wat *nie* die strokie terugstuur nie 'n eksemplaar van die boek sou ontvang by publikasie teen die spesiale prys van 25s. Die gewone verkoopsprys sal £3 3s. 0d. wees. Die boek is in kwartoformaat en bevat 500 bladsye teks, 46 illustrasies en verskeie kaarte. Eksemplare bestem vir lede sal 'n luukseband hê.

Lede wat nie die boek wil ontvang nie, moet die uitgewer dadelik daarvan in kennis stel indien hulle dit nie alreeds gedoen het nie. Mnr. Balkema se adres is Posbus 3117, Kaapstad.

REËLS VAN DIE SUID-AFRIKAANSE GENEESKUNDIGE EN TANDHEELKUNDIGE RAAD: RULES OF THE SOUTH AFRICAN MEDICAL AND DENTAL COUNCIL

REGISTRASIE VAN ADDISIONELE KWALIFIKASIES

Volgens Goewermentskennisgewing No. 88 van 17 Januarie 1958, het die Minister van Gesondheid sy goedkeuring geheg aan 'n wysiging van die reëls van die Suid-Afrikaanse Geneeskundige en Tandheelkundige Raad en die volgende kwalifikasies is nou as addisionele kwalifikasies registreerbaar:

Universiteit van Stellenbosch: M.D., M. Med (Anaes.), M. Med. (Chir.), M. Med. (Int.), M. Med. (O. & G.), M. Med. (Paed).

REGISTRATION OF PSYCHOLOGISTS

In Government Notice No. 87 of 17 January 1958, the Minister of Health has approved of the following amendments to the rules regarding the Registration of Psychologists made by the South African Medical and Dental Council:

(i) by the substitution in rule 1(*c*) of the words 'twelve months' for the words 'six months'.

(ii) by the addition of the following new rule to the existing rules: '(5) Notwithstanding anything to the contrary in these rules contained, it shall be lawful for the Council to register as a psychologist any person who has not fully complied with these rules, if the Council, after due enquiry, is satisfied that such person is competent to practise as a psychologist.'

IN MEMORIAM

H. L. HEIMANN, M.D., F.R.C.P.

Dr. K. F. Mills, Medical Superintendent, Johannesburg Hospital, writes as follows: The death of Dr. H. L. Heimann took place in Johannesburg on 14 January 1958 at the age of 63 years.

Dr. H. L. Heimann

Dr. Heimann had a long and distinguished career in association with the Johannesburg Hospital. He was appointed Honorary Medical Registrar on 1 January 1924, Honorary Assistant Physician in December of the same year, and Senior Honorary Physician on 1 December 1939. He became part-time Senior Physician on the dissolution of the honorary visiting medical staff in 1950, which post he held until his retirement in October 1954, after which he was appointed Honorary Consulting Physician to the Hospital. He re-entered the Provincial Service in August 1956 as a Senior Medical Officer at Edenvale Hospital, whence, in July 1957, he was transferred to the Johannesburg Hospital as Out-Patient Medical Officer, which position he held until his death.

By more than 32 years' loyal service to the Johannesburg Hospital and its public, Henry Heimann made a notable contribution to the welfare of the citizens of the Transvaal, and to the history of the Hospital and the Medical School associated with it. He was the pioneer in the Hospital of the recognition of Cardiology as a distinct sub-field within the field of Internal Medicine, and was Physician in charge of Electrocardiography for several years before 1939. He was a member of the Johannesburg Hospital Board, as a representative of the honorary visiting medical staff from 1946 to 1950.

But his main claim to remembrance is that of a kindly cheerful and humane physician with the welfare of his patients and his students close to his heart, who got on with the job in hand conscientiously, unobtrusively and without self-seeking.

May he rest in peace.

Dr. M. M. Posel writes: By the death of Dr. H. L. Heimann, medicine in South Africa, and particularly cardiology, has suffered a great and irreparable loss.

Henry Heimann was one of the first specialist physicians in the Transvaal, and his opinion on cardiological matters was sought after far and wide, and beyond the precincts of Southern Africa. He was a member of the British Cardiac Society, and a Fellow of the Royal College of Physicians, London, both richly deserved honours.

For many years a Senior Physician on the staff of the Johannesburg General Hospital, he was extremely popular with all classes of patients and students, and gave of his best to all.

He served as O.C. Medical Division, with the rank of Lieut.-Colonel, in the S.A.M.C. at Oribi Hospital, Maritzburg, during the last war, and did a magnificent job of work there.

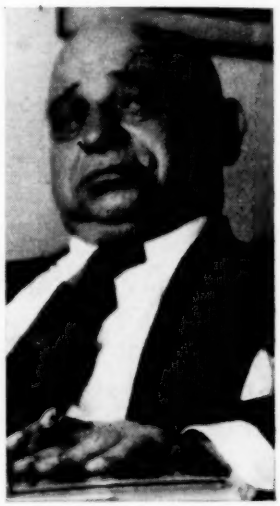
Of late years his health had been failing, and a peaceful departure was a merciful release.

To his wife and 3 sons, one a doctor and another a medical student, we express our deep sympathy.

* * *

HARRY KRAFCHIK, L.R.C.P. & S. (EDIN.), L.R.F.P.S. (GLASG.)

Dr. H. Myers, of Cape Town, writes: It is with deep sorrow that I write this 'In Memoriam' to a good friend and loyal colleague in the person of Dr. Harry Krafchik, who passed away on 29 January 1958. Our association dates back to 1919, when we started medicine at Cape Town University, and we shared digs throughout our student days here and at Edinburgh.



Dr. Harry Krafchik

'Katy', as he was nicknamed at Varsity, was a colourful personality, and was endowed with many great virtues. The outstanding ones were a great sense of humour, a very generous disposition, and a very humble spirit. The men who associated with him during the war years on active service found in these attributes great comfort and encouragement, which helped them through their difficult and hard days.

After the war he decided to make dermatology his career and proceeded to London, where he spent a year under the guidance of Dr. Muende at St. John's Hospital for Diseases of the Skin. There he obtained not only a sound knowledge of skin diseases, but a profound knowledge of skin pathology, which was his forte. Having been a general practitioner for many years before, he had a good knowledge of general medicine, which gave him a broader approach to this speciality.

He was a voracious reader and could seldom resist the temptation to buy books, especially on skin diseases. His collection of books on dermatology is probably one of the finest in the country.

The medical profession at the Cape is the poorer for his passing. He was a friend of the poor of all races and creeds, and many will utter a silent prayer and pronounce a blessing for the noble man who befriended them in his lifetime. He will be sadly missed and to his wife, son and daughter and the rest of his family goes my heartfelt sympathy in their irreparable loss.

May his dear soul rest in peace.

Dr. Willem P. Steenkamp, of Cape Town, writes: With the passing of Dr. Krafchik we have lost not only an able and conscientious colleague, but a most colourful and lovable personality.

At his initiation when enrolling as a student at Cape Town University, his tormentors demanded a song and he responded by rendering 'Katy', and by that name he was ever after known to his friends.

After qualifying in Edinburgh he practised for a while in South Africa and then settled in Cape Town, where he confined his practice to venereal diseases and skins. At the outbreak of World War II he was one of the first to volunteer for full-time service and he rendered valuable service in the SAMC, first in East Africa and later as dermatologist in Florence. After demobilization he did a postgraduate course in London and then settled as specialist dermatologist in Cape Town, where through his ability and charm he soon built up an extensive dermatological practice, also being appointed consulting dermatologist to the South African Railways & Harbours, as well as joining the honorary staffs of Groote Schuur Hospital and the Cape Town Free Dispensary.

Having been raised in Malmesbury, he was very thoroughly bilingual but, what was more, he understood the soul of the platteland and could appreciate the humour of the veld and the common man—no wonder that patients from the country districts flocked to him. It was a pleasure to tell him the latest Afrikaans story making the rounds and his explosive laughter on his last night on earth still rings in my ears—although he was very apprehensive of the morrow.

Under a bluff exterior which, coupled with a very healthy appetite, made him a favourite guest and invariably the soul of any party, he was a most sensitive man and was deeply injured by unwarranted criticism or persecution.

He was richly endowed with charity—that greatest gift to man. Although never affluent himself he quietly gave to different benevolences—often more than he could afford. His help will be missed by many.

'Katy' had no enemies. His memory will be forever green and he will be genuinely mourned by his numerous colleagues, friends and patients. Verily it can be said that his comparatively short life was brimful of goodwill towards all, malice towards none, untainted by greed or jealousy. His soul has surely ascended unpolluted towards the Throne of Grace where the blessed rest forever in eternal peace.

To his wife, daughter and son we extend our deepest sympathy.

HAYMAN ISAAC MAISTER, F.R.C.S.*

A Port Elizabeth correspondent writes: The whole of Port Elizabeth was shocked and grieved at the sudden and unexpected passing of Mr. H. I. Maister on 4 January 1958 at the age of 53.

After his work in the UK and his distinguished military service he returned to South Africa and settled in Port Elizabeth. He was appointed Nuffield Orthopaedic Surgeon of the region extending from Port Elizabeth to East London, Umtata and the Transkei for a period of 5 years. His practice left him little time for leisure and his honorary appointments as Orthopaedic Surgeon to the Provincial Hospitals of Port Elizabeth and Uitenhage, the Livingstone Hospital and the Settlers Hospital, Grahamstown, kept him fully occupied.

Mr. Maister carried on the spirit of the honorary system with its tradition of service and he undertook a greater burden of *pro deo* work than any of his colleagues in this area. He was a conscientious and excellent surgeon and operator, who never spared himself. One remembers at a mass meeting of doctors called to vote for the abolition of the honorary system his was the only vote recorded for its retention, when he said, 'I am a die-hard'.

There was only one 'Maister' and we all feel we have lost a friend. He was a gentleman and always did the correct thing. One could not imagine anything mean or petty about him. We feel it was a privilege to be associated with him in his work.

He served on most of the hospital committees and on the Branch Council of the Medical Association, of which he was a Past President. When he found time after a heavy week of work, he was a useful golfing member of the Wedgewood Club.

We extend our heartfelt sympathy to his wife, Dr. Ada Barnett, his two young children and his elderly parents and family. The large crowd of all classes attending his funeral and the tributes paid to him by his colleagues, patients and the public of Port Elizabeth are some evidence of the esteem in which he was held by all.

* An In Memoriam notice was published in the *Journal* on 8 February (32, 171).

PASSING EVENTS : IN DIE VERBYGAAN

Dr. Beorn C. Uys, son of Dr. A. I. Uys of Margate, Natal, formerly of Johannesburg, has passed the examinations for the M.R.C.O.G. He will be returning to South Africa in March.

* * *

Research Forum, University of Cape Town. A meeting of Research Forum will be held on Wednesday 5 March at 12 noon, in the A-Floor Lecture Theatre, Groote Schuur Hospital, Cape Town. Dr. W. P. U. Jackson will speak on Sex Reversal.

* * *

Dr. L. H. Muller, Ch.M., Orthopaedic Surgeon, formerly of 95 George Storrar Drive, Groenkloof, Pretoria, has now joined Dr. T. B. Enslin in orthopaedic practice at Cuthbert's Buildings, Maitland Street, Bloemfontein. Telephones: 4874 and 6218.

Dr. L. H. Muller, Ch.M., Ortopediese Chirurg, voorheen van George Storrar-rylaan 95, Groenkloof, Pretoria, het as Ortopediese Chirurg by dr. T. B. Enslin van Cuthbertsgebou, Maitlandstraat, Bloemfontein, aangesluit. Telefone: 4874 en 6218.

* * *

The College of Physicians, Surgeons and Gynaecologists of South Africa. For the Final Examination of the Fellowship in Surgery, successful candidates will be admitted who can show that they have already obtained a pass in the Primary Examination in any of the Surgical Colleges of Great Britain, Canada or Australia. Application forms can be obtained from the Registrar, P.O. Box 120, Cape Town.

* * *

Professor Robert H. Goetz, M.D. (Berne), M.R.C.P. (Lond.), Director of Surgical Research, Albert Einstein School of Medicine, New York (and lately of the Department of Surgery, University of Cape Town), will give an informal talk in the large A-Floor Lecture Theatre of the Groote Schuur Hospital, Cape Town, at 12 noon on Tuesday 25 February 1958. His subject will be Cardiovascular Surgery and Research in the USA.

Workmen's Rehabilitation Centre, Johannesburg. The next Clinical Meeting will be held in the gymnasium of the Centre, Cor. Esselen and King George Streets, Hospital Hill, on Tuesday 25 February at 5.15 p.m. Mr. D. H. Walker, F.R.C.S., will speak on 'Tube Graft to Thigh: Follow-up;' and Mr. S. Sacks, F.R.C.S., will speak on 'Electric Burns of the Hands'. All medical practitioners are invited to attend and to join in the discussions.

* * *

A Postgraduate Week-end Course in Neurology and Neuro-Psychiatry is being organized by the Medical Graduates Association of the University of the Witwatersrand in conjunction with the University Departments concerned. This will take place during the week-end 21-23 March. Those interested should communicate with the Secretary, Medical Graduates Association, Medical School, Hospital Street, Johannesburg; telephone 447040 (9 a.m.-12.30 p.m.)

* * *

Unie van Suid-Afrika. Departement van Gesondheid. Aangifte van gedugte epidemiese siektes en poliomiëlitis in die Unie gedurende die tydperk 31 Januarie tot 6 Februarie 1958:

	Poliomiëlitis				
	Bl.	*Nat.*	*Kl.*	*As.*	*Totaal*
Transvaal ..	9	2	1	—	12
Kaapprovinsie ..	5	—	1	—	6
Oranje-Vrystaat ..	1	—	—	—	1
Natal	1	—	—	—	1
Totaal ..	16	2	2	—	20

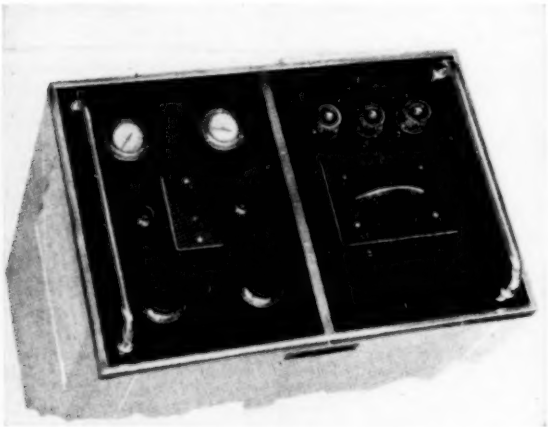
Pes, Pokkies. Geen.

Tifuskoors. Kaapprovinsie: Een (1) Naturellegeval in die Ngqeleni-Distrik. Twee (2) Naturellegevalle in die Munisipale gebied van Steynsburg. Een (1) Naturellegeval in die Glen Grey-Distrik. Alle voorsorgsmaatreëls getref.

NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

THE THERM-O-RITE HYPO-HYPER-THERMIA UNIT

Westdene Products (Pty.) Ltd. introduce the Therm-O-Rite Hypo-Hyper-Thermia Unit and provide the following information. The



Unit is designed for the purpose of replacing ice bags or ice baths and hot water bottles in the application of *cold* or *heat* to patients who require prolonged or extensive applications of either; and—an important consideration—also to provide a scientific method of applying *exact temperatures*.

While the emphasis is usually placed upon the *use of cold in medicine and surgery*, attention is called to the fact that the Therm-O-Rite Hypo-Hyper-Thermia Unit and Applicators provide a convenient and effective method for applying *high, intermediate or low temperatures*.

The Applicators are made in various sizes and shapes for efficiency and convenience in applying a *desired* temperature to the whole body or to any external part. They are flexible, and can be adjusted to patients of quite dissimilar size—making for economy in the number and variety required for a complete hospital service. The blanket-type Applicators are used for generalized refrigeration, i.e. for thoracic, cardiac, cardiovascular and neurologic surgery. They may also be used for the reduction of many types of hyperpyrexia and in the treatment of shock by the reduction of the body temperature by 2-4°.

Applicators providing for localized refrigeration are also available. Localized radical refrigeration has the unique power to *control* simultaneously *pain, shock, exudation, infection and tissue devitalization*. Some of the accepted uses for localized refrigeration are: Anaesthesia for amputations; preservation of limbs for long or short periods; crush injuries, thrombosis and embolism; burns and frost bite; treatment of peripheral vascular diseases; orthopaedic operations; relief of pain, sciatic and neuritic generally.

CORRESPONDENCE : BRIEWERUBRIEK

MALE/FEMALE BIRTH RATIO

To the Editor: I read with interest Dr. Schrire's letter[1] in the current issue of the *Journal*. I wondered whether any further physiological proof could be adduced of lowered spermatogenesis at high temperatures; e.g. in a city like Durban with hot humid summers, could the European sperm count vary in normal individuals from summer to winter. What is the ratio in Durban of male to female European children *conceived* in the summer months, compared with the ratio in winter.

Some years ago a semi-scientific article was published which proved that a significantly high proportion of geniuses and men of outstanding ability were winter conceptions. This suggests a variety of amusing conjectures. Would it mean that more *y*-bearing sperms were available and therefore more potential geniuses conceived; or even that more *y*-bearing sperms with high-grade chromosomes were available.

L. Ruskin

20 Salt River Road,
Salt River, Cape
6 February 1958

1. Schrire, T. (1958): **42**, 144 (1 February).

THE EFFECTS OF BILHARZIA INFECTION IN SCHOOL-CHILDREN

To the Editor: My attention has been drawn to a paper read by Dr. M. Gelfand[1] at the South African Medical Congress in Durban in September 1957 under the title 'The Parasitic Diseases of Man in Africa' and published in the *South African Medical Journal* of 9 November 1957. Dr. Gelfand states that my observations[2] on the deleterious effect of bilharzia infection on the scholastic performance of school-children were not confirmed by investigators[3] in S. Rhodesia, who found that children with bilharziasis showed better school results than those free of the disease.

In this connection I wish to refer to a publication in the *South African Medical Journal* of 10 April 1948, in which Loveridge *et al.*[4] confirm my statements[5] as far as White children in S. Rhodesia are concerned and state that non-European children are apparently not affected in the same way. My opinion is based mainly on experience with European children but a limited number of observations in young Natives has convinced me that they are affected in the same way as White children.

I do not believe that examination results should be taken as a measure of the retarding influence of bilharziasis on the scholastic performance of school-children, but that the problem should be assessed on the basis of performance before infection against performance during infection and again after treatment. I am quite convinced that the pupils with bilharzia who did so well in their examination in S. Rhodesia would have done much better if they had never become infected. I regard the retarding effect of bilharzia on the school work of the child as of toxic origin, because it completely disappears after treatment. The school medical officers of the Transvaal were the first to draw attention to the adverse influence of bilharziasis on the scholastic performance of school children.

If bilharzia really does improve the scholastic performance of the Native children in S. Rhodesia, then one may look forward to a considerable increase in the mental capabilities of these people, and all efforts to eradicate bilharzia may be abandoned.

Julius A. Kieser

119 Murray Street
Brooklyn
Pretoria
5 February 1958

1. Gelfand, M. (1957): S. Afr. Med. J., **31**, 1137.
2. Kieser, J. A. (1934): *Ibid.*, **8**, 323.
3. Blair, D. M., Loveridge, F. G., Neeser, C. V. and Ross, W. F. (1949): Lancet, **1**, 344.
4. Loveridge, F. G., Ross, W. F. and Blair, D. M. (1948): S. Afr. Med. J., **22**,260
5. Kieser, J. A. 1947): S. Afr. Med. J., **21** 854.